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DPMA Gives Thumbs Up to Cobol Standard

By Lois Paul
CW Staff

CHICAGO — The Data Processing Management Association last week withdrew its strong objections to the American National Standards Institute's proposed Cobol standard, citing the responsiveness of Ansi's X3J4 subcommittee to its comments about the changes to the language.

DPMA's withdrawal of its objections was a reversal of its previous stance on the proposed Cobol standard. Over a year ago, the organization came out firmly against Cobol 80 [CW, Oct. 26, 1981], leading opposition against the proposed standard on behalf of the more than 30,000 DP managers it represents nationwide.

The organization's change in position was the result of the receipt and subsequent review of an X3J4 mailing that was sent last week to the approximately 2,300 individuals who submitted comments about Cobol 80. The package, Document No. X-785, responds to all comments received about Cobol 80 and details their disposition. It also includes a 55-page "Rationale for Cobol Revision Changes," which addresses the question of up-

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NEWSPAPER

COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

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Harris Adding Two Machines To Rival VAX

By Susan Blakeney
CW Staff

FORT LAUDERDALE, Fla. — Harris Corp. is slated this week to announce two additions to its high-end computer system line that feature extended memory, additional I/O peripherals and reportedly more configuration flexibility than present offerings. The H800-2B and H800-2BP were built to compete head-on with Digital Equipment Corp.'s VAX-11/780 supermini.

Harris will also announce an Integrated Memory Subsystem that combines a controller and array memory on a single board. The Integrated Memory Subsystem is included as part of the new processors, but can be purchased separately for use with other Harris computers (story on Page 4).

(Continued on Page 4)

CW Illustration

Wrong

The woolly caterpillar, the *Farmer's Almanac* and all the people who predicted that this winter would be a frigid one were wrong. The computer was right. Story on Page 9.

FCC Decision to Alter Dial-Up Service Fees

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — Charges for dial-up communications services will be altered drastically in 1984 by a decision the Federal Communications Commission made last month.

The FCC established a new method of paying local telephone companies for the local-loop facilities they attach to the ends of interstate circuits. As a result, the monthly charges levied by these phone companies on their business customers are likely to increase up to $30 per line next year.

Interstate carriers currently pay all local-access charges and are reimbursed by their customers. Under the new system, each telephone network user will be billed directly by his local telephone company for roughly half of the Non-Traffic-Sensitive portion of the local-access charge.

The carriers will pay the rest of the Non-Traffic-Sensitive portion as well as the traffic-sensitive portion of the local-access charge, plus a subsidy to help cover the higher costs of extending telephone service into sparsely populated rural areas.

The Non-Traffic-Sensitive portion is the largest part of the local-access charge. It covers the local loop plus attached terminal equipment and inside wiring if leased from the telephone company. Beginning in 1984, business users will pay a minimum flat-rate charge each month of $4 per line, plus a usage-based fee of up to $26 per line, to cover the 50% of Non-Traffic-Sensitive costs that will be charged to them directly.

In 1985 and subsequent years, all Non-Traffic-Sensitive charges, including those levied initially on the carriers, will be shifted gradually to a flat rate imposed on the user. The flat rate then will be increased 20% annually.

Although the charges to be imposed next year will increase the user's payments to his local telephone company, the carriers offering Message Toll Service (MTS) and Wats are likely to reduce their rates. It is unclear, however, whether this de-

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After Testing a T/S Version at 100 Sites

Comshare Announces DSS for IBM Users

By Lois Paul
CW Staff

ANN ARBOR, Mich. — After testing a time-sharing version of a decision support system for IBM and plug-compatible mainframes running under VM for nine months at more than 100 user sites, Comshare, Inc. today unveiled a stand-alone version of the product, System W.

System W is the central component of several packages:

- System W Plus supports nine dimensions and 2,000 members per viewpoint.
- System W Distributed includes System W plus the data communications and error-checking capabilities necessary to support Micro W, a version of the decision support system for IBM Personal Computers and Apple Computer, Inc. microcomputers.

System W can be run on IBM 4331 systems with at least 2M bytes of memory running under VM/CMS. It requires 125K bytes of actual memory per user.

The basic System W software is a multidimensional decision support system intended to allow users to handle multiple products, locations, companies or market sectors one at a time or all at once. It supports the use

(Continued on Page 4)

CICS Users Come Down Hard on 'DMS'

By Paul Gillin
CW Staff

NEW YORK — CICS users expressed disapproval of IBM's Development Management System (DMS) on-line application development package in a dramatic and decisive fashion at a CICS users group conference here recently.

Prompted by a question from a member of the audience, only a fraction of the DMS users present indicated that they were pleased with their IBM package.

The exchange came at the conclusion of IBM representative Ron Wilkins' DMS pitch to more than 150 members of the CICS Users Group, which is sponsored by Tel'ech Systems, Inc. Wilkins had just opened the floor for questions when Stanley Gordon, a consultant for LTI Consulting Services in New York, seized the microphone and asked the attendees, "How many of you are currently using DMS?"

About 35 hands went up. "Now, how many of you are satisfied with DMS?" Gordon continued. About a half-dozen hands greeted the question. "Thank you," Gordon said and sat down.

The exchange highlighted dissatisfaction that DMS users have expressed recently with the IBM appli-

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Monitoring by Soviets Feared

Customs Warns Agents on Security

By Jim Bartimo
CW Staff

SAN FRANCISCO — Fear that Soviet spy ships are monitoring its telephone, radio and data communications has led the U.S. Customs Office here to release an internal memo warning 41 of its special agents to step up their security measures.

There is also some suspicion that the Customs Office's Treasury Enforcement Communications System (Tecs) has been monitored. Tecs is the agency's data base system that has remote terminals in ports of entry around the country.

Tecs "holds computer information on drug trafficking, stolen vehicles and other export information," customs spokesman Mike Fleming said. "It's a law enforcement intelligence system. It's tied into [the Federal Bureau of Investigation's] National Crime Information Center."

The Customs Office, located near Silicon Valley, Calif., has been active in Operation Exodus, the Customs Office crackdown on the illegal export of high-tech equipment to Eastern Bloc countries and the USSR [CW, March 1]. The project has been stepped up in recent months with an increased budget.

Intelligence Warning

According to the Customs Office's Fleming, "We've been in touch with an intelligence agency" that warned that the agency's communications may be monitored. The agency sent a memo last month to its special agents, which Fleming paraphrased as saying, "In the words of the sergeant on *Hill Street Blues* — 'Let's be careful out there.' "

A spokeswoman for the Customs Office in Washington, D.C., Christine Frazer, said, "We have to assume that the Soviets are monitoring our phone lines." In order to make calls that are not monitored, "we can go through the teletype or the FBI, and we do have some secure phone lines," she added.

Some of the Customs Office's phone and radio transmissions are equipped with voice security systems that break up voice messages and decode them upon receipt, Special Agent Thomas Boyd said. "That equipment is very expensive."

An $8 million emergency funding bill in 1982 and a $20 million budget for 1983 will allow Operation Exodus to afford more of these voice security systems, Frazer noted. "It's just a matter of time before all the phone lines are secure."

Operation Exodus has yielded 765 seizures of improperly licensed or otherwise illegally exported equipment worth $55.6 million. The seizures have resulted in 30 completed criminal cases and 70 convictions.

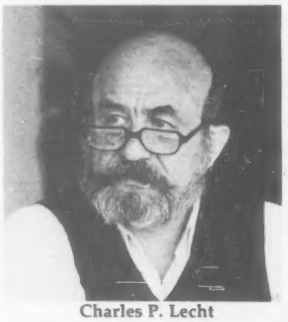
Lecht Becomes CW Columnist

Charles P. Lecht joins *Computerworld* this week as a regular columnist. His column, "Lecht on Science," will cover wide-ranging issues in computer news and technology and will appear every other week on the Op-Ed page.

Lecht, who is president of Lecht Sciences Inc., a New York-based think tank specializing in computer and communications technologies, has been involved with informatics and the computer industry for three decades. In 1962 he founded Advanced Computer Techniques (ACT), a software firm specializing in programs for business, government and the military. Last fall he resigned as chairman of the board of ACT to found Lecht Sciences.

Free of the constraints of directing a full-time business, Lecht, along with a few colleagues, now plans to write, speak and think about technological implications for the future.

Lecht received a B.S. degree in mathematics from Seattle University and an M.S. degree in mathematics from Purdue University. He maintains a heavy schedule of speaking engagements and consulting assignments and has written five books, most notably *The Waves of Change: A Techno-Economic Analysis of the Data Processing Industry*, published by McGraw-Hill in 1977. He is currently working on a sixth book, tentatively titled *The Technology Vector* and scheduled for publication by Prentice Hall this fall.



Charles P. Lecht

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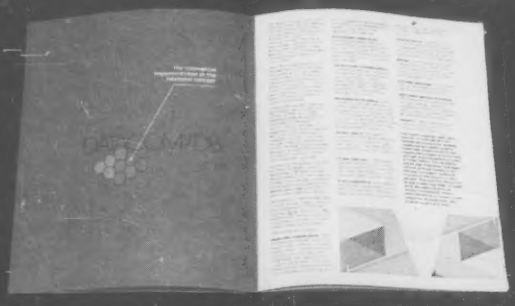

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Comshare DSS For IBM Users

(Continued from Page 1)

of four dimensions and over 1,000 members per viewpoint.

System W reportedly also lets users produce reports with any of the dimensions of the model anywhere on the page, the vendor noted. Numbers can be printed in any format.

Text, numbers and other information can be mixed, and any dimensions of the model can be extended in a report to produce new groupings and can form rows or columns.

System W reportedly handles currency conversions and allocation of overheads automatically. Variables can be added or changed as necessary, the vendor said, and new dimensions can be added if required. System W will automatically restructure whatever is necessary to ensure the integrity of the model.

The software has a "what if?" sensitivity testing and goal-seeking capability that extends to all dimensions of the model, the vendor said, adding that all changes can be made on a temporary or permanent basis.

Micro W is intended for distributed decision support and addresses the need for a two-dimensional modeling capability in the hands of decision makers and their staffs, the vendor said. A model written on Micro W reportedly is totally compatible with the mainframe version of System W. Users can move a model to the mainframe from the micro and run it without modification when more processing power is needed.

Building a model on Micro W is done by proceeding through a series of menus displaying System W commands, similar to the way models are built on the mainframe version, the vendor added.

According to Kevin O.N. Kalkhoven, group vice-president of marketing for Comshare, Micro W minimizes rounding errors often encountered when mainframe software is transferred to micros. He said Micro W was designed not as a standalone micro package but as a distributed decision support system.

"I don't say it is as fast as [Visicorp's] Visicalc, but it is designed to do something different," he added.

With its Investigate command, Micro W goes into a "calc-like" mode, he continued, in which it is a spreadsheet with the capability of handling 7,000 to 10,000 cells. Kalkhoven stressed that Micro W can be run as a total modeling language rather than just as a spreadsheet.

Micro W includes an optional set of materials for computer-aided instruction of new users. Available for $1,500, this is comprised of 16 hours of training. The basic course is eight hours of training, available on a floppy disk to be run only on a personal computer. Day 2 of the training is an additional eight hours, which develops more complex topics such as viewpoints.

The core system is available for $55,000. System W Plus is priced at $75,000. System W Distributed costs $80,000, which includes two copies of Micro W. Additional copies of the latter are priced at $995 each.

Comshare is at Wolverine Tower, 3001 S. State St., Ann Arbor, Mich. 48104.

One of First 'System W' Users Looked for Ease of Use, Training

By Lois Paul
CW Staff

DENVER — When your user community has virtually no programming background nor any desire to gain computer expertise, the last thing you need is a complex decision support system (DSS).

That situation led Neil Williamson, a senior consultant with Fox & Co., a national accounting firm here, to pinpoint ease of use and training as the primary requirements for a DSS. Along with Fox's familiarity with Comshare, Inc.'s time-sharing network and products, it also led Fox to be one of the first domestic users of System W, the DSS formally announced today by Comshare (story on Page 1).

Fox began using the time-sharing version of System W last April; today, 30 to 40 users are up and running on the software. Although Fox is not yet employing Micro W, the company recently acquired an Apple Computer, Inc. Apple III microcomputer. As compatible micros are added, Fox will begin using the micro version of System W, Williamson said.

A move to the in-house version of System W, which runs on VM-based IBM and plug-compatible mainframes, is not anticipated at Fox. Most of Fox's in-house hardware consists of minicomputers that will not support the stand-alone version of the product.

A number of DSS packages to which Fox has access via time-sharing — Tabol from General Electric Information Services Co.; Boeing Computer Services Co.'s Executive Information Services; Nomad II from National CSS, Inc.; and FCS-EPS from EPS, Inc. — were reviewed before Williamson's group chose System W.

System W was considered more appropriate partly because of its English-language orientation. "As intermediary users, we are just developing models to apply to situations of our clients. Generally, our client doesn't realize we are using a computer. The client only wants to see the bottom line," Williamson said.

In terms of training, System W has fared better than some other modeling languages his firm has used, Williamson added. Several people in his office spent a week training to use FCS-EPS, he said, but then shied away from using it. He attributed this to a general fear of computers and the complexity of the language.

System W has required a day and a half of training at Fox, according to Williamson. His firm was trained before the self-teaching tapes became available.

With little prompting, novice users begin to do simple applications and models with little support or supervision, Williamson said. "We wanted something that would be self-generating, that would become natural to use and would not be a pain and a challenge in and of itself. We are very impressed with that."

System W's use of viewpoints "allows incredible flexibiity in defining relationships between groups of data and functions," he explained. For example, Fox used the software to create a model to handle cash flow projection for a client's real estate development project. The client corporation is broken down into five divisions, within which are several products. These are single-family homes, condominiums and townhouses, which are broken down further into types. In addition, there are cost features, and an overlaying consolidation of the hierarchy involves time features.

Working with these complex interrelationships, Williamson's group used viewpoint members to reduce the number of variables and simplify the rules. For example, it employed a viewpoint member for condominium and townhouses. Variables such as unit cost or unit sales value could be applied as needed to the same viewpoint. This allowed flexibility in inputting data and simplified the equations that were used.

When clients wanted to review the relationships used in the model, he said, it was surprisingly easy to extract that information using the power of viewpoints. "We did basically in three days a very, very large complex model that we couldn't have done in earlier times if we had to use other modeling languages," he said.

Harris Adds VAX Rivals to Its High End

(Continued from Page 1)

The H800-2B and H800-2BP are reportedly capable of supporting up to 128 concurrent users each and performing interactive program development, time-sharing, multistream batch, multiple remote job entry and real-time processing. The H800-2BP, Harris' highest performance virtual memory supermini, also has 6K bytes of bipolar cache memory, a spokesman said.

Like other Harris systems, the H800-2B and H800-2BP incorporate an integral hardware floating-point processor and a 48-bit architecture, with pipeline and parallel processing. However, they occupy just one-third the floor space of previous H800 machines, the spokesman claimed. Because of their construction, each system can be housed in a single compact cabinet, along with its accompanying disk drive and magnetic tape units.

The H800-2BP will be offered at a price similar to or lower than the VAX-11/780, but it provides approximately 30% more performance, according to Harris. The H800-2B reportedly offers performance equal to the 11/780 but costs about 15% less.

Both systems incorporate as standard equipment Harris' recently announced Communications Network Processor (CNP). The CNP, designed to relieve the CPU of performance degradation due to terminal load, supports communications via asynchronous, synchronous, isosynchronous and X.25 protocols [CW, Aug. 2]. It supports up to 16 communications lines, each of which can concurrently support a different protocol at different speeds and can be used for either remote or local connections, the vendor said.

The price of the H800-2B begins at $139,000. The 2B is field-upgradeable to a 2BP for an additional $35,000. H800-2BP prices start at $164,000.

The two systems are slated for shipment in March from Harris' Computer Systems Division, 2101 W. Cypress Creek Road, P.O. Box 6200, Fort Lauderdale, Fla. 33310.

Subsystem Available Separately

FORT LAUDERDALE, Fla. — The Integrated Memory Subsystem that Harris Corp. will announce later this week is included as part of the new H800-2B and H800-2BP processors, but can be purchased separately for use with other Harris computers.

The Integrated Memory Subsystem combines memory controller functions and memory arrays on a single board. The subsystem does this by incorporating an Integrated Disk Controller that combines the functions of an I/O channel and a disk controller on a single board. The Integrated Disk Controller supports up to four disks, according to the vendor.

The Integrated Memory Subsystem can be configured for up to 12M bytes of real memory. It has a typical access time of 250 nsec and a cycle time of 335 nsec for 48 bits of data, a Harris spokesman said.

Large-scale integration technology has been incorporated into the Integrated Memory Subsystem for error detection and correction. The board is said to be capable of detecting and correcting all single-bit errors and of detecting all two-bit and most three-or-more-bit errors. Error correction is possible on 48-bit memory accesses, the vendor said.

As a guard against random failure due to alpha particle radiation, the Integrated Memory Subsystem also performs rewrite operations on all correctable errors. The memory also has error-logging capability and the ability to force memory errors for testing purposes.

The memory's design reportedly saves one slot in the CPU chassis. It is currently available in several memory sizes, including a 384K-byte version, which costs $9,000; a 768K-byte model for $12,500; or 1.5M-byte model priced at $18,500. The memory is compatible with the full line of Harris superminis.

The subsystem is available from Harris' Computer Systems Division, 2101 W. Cypress Creek Road, P.O. Box 6200, Fort Lauderdale, Fla. 33310.

Honeywell Introduces Five Financial Packages

By Lois Paul
CW Staff

WALTHAM, Mass. — Five on-line financial planning and management software packages for its large-scale Level 66, Level 66/DPS and DPS 8 processors and its recently announced very large-scale DPS 88 systems running under Gcos and Gcos 8 were introduced here by Honeywell, Inc.

The five packages are the Honeywell Financial and Corporate Planning System (HFCS), the Honeywell Cashflow Management System (HCMS) and on-line versions of the firm's existing accounts receivable, accounts payable and general ledger batch systems, which are said to be fully compatible. The five packages can reside on the same computer system or be purchased and installed separately, Honeyell said.

HFCS allows the user to build a financial model of a company, including "what if" analyses that can test the effects of such variables as increased volumes, different tax rates, inflation and new investments. Optional modules include HFCS Hierarchical Consolidation, which reportedly consolidates data from multiple product lines or divisions in a simple aggregate manner or according to a company's hierarchical structure; and HFCS Risk Analysis, which helps the user evaluate the uncertainty of forecasts associated with a plan, using the Monte Carlo method, to arrive at the most valid probability distributions.

HCMS is a terminal-oriented application that provides a structured approach to planning and controlling a company's investment and borrowing programs up to 18 months in the future, according to Honeywell. Information is maintained on future cash requirements, payroll deduction data, cash projections and the estimated and actual amounts for major revenue and expenditure categories for up to 99 different funds. Each fund can be maintained individually or combined with any or all others in developing forecasts.

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The initial license fee per package for Online Accounts Receivable, Accounts Payable and General Ledger is $3,320, plus an annual support charge of $330. The alternative monthly license fee for each package is $110, which includes support. The initial license fee for each of the prerequisite batch systems for the online packages is $7,207. The monthly license fee for each package is $239.

Further information can be obtained from Honeywell at 200 Smith St., Waltham, Mass. 02154.

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Comshare DSS For IBM Users

(Continued from Page 1)

of four dimensions and over 1,000 members per viewpoint.

System W reportedly also lets users produce reports with any of the dimensions of the model anywhere on the page, the vendor noted. Numbers can be printed in any format.

Text, numbers and other information can be mixed, and any dimensions of the model can be extended in a report to produce new groupings and can form rows or columns.

System W reportedly handles currency conversions and allocation of overheads automatically. Variables can be added or changed as necessary, the vendor said, and new dimensions can be added if required. System W will automatically restructure whatever is necessary to ensure the integrity of the model.

The software has a "what if?" sensitivity testing and goal-seeking capability that extends to all dimensions of the model, the vendor said, adding that all changes can be made on a temporary or permanent basis.

Micro W is intended for distributed decision support and addresses the need for a two-dimensional modeling capability in the hands of decision makers and their staffs, the vendor said. A model written on Micro W reportedly is totally compatible with the mainframe version of System W. Users can move a model to the mainframe from the micro and run it without modification when more processing power is needed.

Building a model on Micro W is done by proceeding through a series of menus displaying System W commands, similar to the way models are built on the mainframe version, the vendor added.

According to Kevin O.N. Kalkhoven, group vice-president of marketing for Comshare, Micro W minimizes rounding errors often encountered when mainframe software is transferred to micros. He said Micro W was designed not as a standalone micro package but as a distributed decision support system.

"I don't say it is as fast as [Visicorp's] Visicalc, but it is designed to do something different," he added.

With its Investigate command, Micro W goes into a "calc-like" mode, he continued, in which it is a spreadsheet with the capability of handling 7,000 to 10,000 cells. Kalkhoven stressed that Micro W can be run as a total modeling language rather than just as a spreadsheet.

Micro W includes an optional set of materials for computer-aided instruction of new users. Available for $1,500, this is comprised of 16 hours of training. The basic course is eight hours of training, available on a floppy disk to be run only on a personal computer. Day 2 of the training is an additional eight hours, which develops more complex topics such as viewpoints.

The core system is available for $55,000. System W Plus is priced at $75,000. System W Distributed costs $80,000, which includes two copies of Micro W. Additional copies of the latter are priced at $995 each.

Comshare is at Wolverine Tower, 3001 S. State St., Ann Arbor, Mich. 48104.

One of First 'System W' Users Looked for Ease of Use, Training

By Lois Paul
CW Staff

DENVER — When your user community has virtually no programming background nor any desire to gain computer expertise, the last thing you need is a complex decision support system (DSS).

That situation led Neil Williamson, a senior consultant with Fox & Co., a national accounting firm here, to pinpoint ease of use and training as the primary requirements for a DSS. Along with Fox's familiarity with Comshare, Inc.'s time-sharing network and products, it also led Fox to be one of the first domestic users of System W, the DSS formally announced today by Comshare (story on Page 1).

Fox began using the time-sharing version of System W last April; today, 30 to 40 users are up and running on the software. Although Fox is not yet employing Micro W, the company recently acquired an Apple Computer, Inc. Apple III microcomputer. As compatible micros are added, Fox will begin using the micro version of System W, Williamson said.

A move to the in-house version of System W, which runs on VM-based IBM and plug-compatible mainframes, is not anticipated at Fox. Most of Fox's in-house hardware consists of minicomputers that will not support the stand-alone version of the product.

A number of DSS packages to which Fox has access via time-sharing — Tabol from General Electric Information Services Co.; Boeing Computer Services Co.'s Executive Information Services; Nomad II from National CSS, Inc.; and FCS-EPS from EPS, Inc. — were reviewed before Williamson's group chose System W.

System W was considered more appropriate partly because of its English-language orientation. "As intermediary users, we are just developing models to apply to situations of our clients. Generally, our client doesn't realize we are using a computer. The client only wants to see the bottom line," Williamson said.

In terms of training, System W has fared better than some other modeling languages his firm has used, Williamson added. Several people in his office spent a week training to use FCS-EPS, he said, but then shied away from using it. He attributed this to a general fear of computers and the complexity of the language.

System W has required a day and a half of training at Fox, according to Williamson. His firm was trained before the self-teaching tapes became available.

With little prompting, novice users begin to do simple applications and models with little support or supervision, Williamson said. "We wanted something that would be self-generating, that would become natural to use and would not be a pain and a challenge in and of itself. We are very impressed with that."

System W's use of viewpoints "allows incredible flexibiity in defining relationships between groups of data and functions," he explained. For example, Fox used the software to create a model to handle cash flow projection for a client's real estate development project. The client corporation is broken down into five divisions, within which are several products. These are single-family homes, condominiums and townhouses, which are broken down further into types. In addition, there are cost features, and an overlaying consolidation of the hierarchy involves time features.

Working with these complex interrelationships, Williamson's group used viewpoint members to reduce the number of variables and simplify the rules. For example, it employed a viewpoint member for condominium and townhouses. Variables such as unit cost or unit sales value could be applied as needed to the same viewpoint. This allowed flexibility in inputting data and simplified the equations that were used.

When clients wanted to review the relationships used in the model, he said, it was surprisingly easy to extract that information using the power of viewpoints. "We did basically in three days a very, very large complex model that we couldn't have done in earlier times if we had to use other modeling languages," he said.

Harris Adds VAX Rivals to Its High End

(Continued from Page 1)

The H800-2B and H800-2BP are reportedly capable of supporting up to 128 concurrent users each and performing interactive program development, time-sharing, multistream batch, multiple remote job entry and real-time processing. The H800-2BP, Harris' highest performance virtual memory supermini, also has 6K bytes of bipolar cache memory, a spokesman said.

Like other Harris systems, the H800-2B and H800-2BP incorporate an integral hardware floating-point processor and a 48-bit architecture, with pipeline and parallel processing. However, they occupy just one-third the floor space of previous H800 machines, the spokesman claimed. Because of their construction, each system can be housed in a single compact cabinet, along with its accompanying disk drive and magnetic tape units.

The H800-2BP will be offered at a price similar to or lower than the VAX-11/780, but it provides approximately 30% more performance, according to Harris. The H800-2B reportedly offers performance equal to the 11/780 but costs about 15% less.

Both systems incorporate as standard equipment Harris' recently announced Communications Network Processor (CNP). The CNP, designed to relieve the CPU of performance degradation due to terminal load, supports communications via asynchronous, synchronous, isosynchronous and X.25 protocols [CW, Aug. 2]. It supports up to 16 communications lines, each of which can concurrently support a different protocol at different speeds and can be used for either remote or local connections, the vendor said.

The price of the H800-2B begins at $139,000. The 2B is field-upgradeable to a 2BP for an additional $35,000. H800-2BP prices start at $164,000.

The two systems are slated for shipment in March from Harris' Computer Systems Division, 2101 W. Cypress Creek Road, P.O. Box 6200, Fort Lauderdale, Fla. 33310.

Subsystem Available Separately

FORT LAUDERDALE, Fla. — The Integrated Memory Subsystem that Harris Corp. will announce later this week is included as part of the new H800-2B and H800-2BP processors, but can be purchased separately for use with other Harris computers.

The Integrated Memory Subsystem combines memory controller functions and memory arrays on a single board. The subsystem does this by incorporating an Integrated Disk Controller that combines the functions of an I/O channel and a disk controller on a single board. The Integrated Disk Controller supports up to four disks, according to the vendor.

The Integrated Memory Subsystem can be configured for up to 12M bytes of real memory. It has a typical access time of 250 nsec and a cycle time of 335 nsec for 48 bits of data, a Harris spokesman said.

Large-scale integration technology has been incorporated into the Integrated Memory Subsystem for error detection and correction. The board is said to be capable of detecting and correcting all single-bit errors and of detecting all two-bit and most three-or-more-bit errors. Error correction is possible on 48-bit memory accesses, the vendor said.

As a guard against random failure due to alpha particle radiation, the Integrated Memory Subsystem also performs rewrite operations on all correctable errors. The memory also has error-logging capability and the ability to force memory errors for testing purposes.

The memory's design reportedly saves one slot in the CPU chassis. It is currently available in several memory sizes, including a 384K-byte version, which costs $9,000; a 768K-byte model for $12,500; or 1.5M-byte model priced at $18,500. The memory is compatible with the full line of Harris superminis.

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Honeywell Introduces Five Financial Packages

By Lois Paul
CW Staff

WALTHAM, Mass. — Five on-line financial planning and management software packages for its large-scale Level 66, Level 66/DPS and DPS 8 processors and its recently announced very large-scale DPS 88 systems running under Gcos and Gcos 8 were introduced here by Honeywell, Inc.

The five packages are the Honeywell Financial and Corporate Planning System (HFCS), the Honeywell Cashflow Management System (HCMS) and on-line versions of the firm's existing accounts receivable, accounts payable and general ledger batch systems, which are said to be fully compatible. The five packages can reside on the same computer system or be purchased and installed separately, Honeyell said.

HFCS allows the user to build a financial model of a company, including "what if" analyses that can test the effects of such variables as increased volumes, different tax rates, inflation and new investments. Optional modules include HFCS Hierarchical Consolidation, which reportedly consolidates data from multiple product lines or divisions in a simple aggregate manner or according to a company's hierarchical structure; and HFCS Risk Analysis, which helps the user evaluate the uncertainty of forecasts associated with a plan, using the Monte Carlo method, to arrive at the most valid probability distributions.

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User Friendliness, Compatibility at Top

CICS Users List Application Development Goals

By Paul Gillin
CW Staff

NEW YORK — User friendliness and compatibility with existing programming languages are among the top features IBM CICS users are looking for in an application development system, according to an informal survey of users at a recent conference here.

Users also expressed concern that an application development system should include interfaces to existing data base management systems (DBMS), file transfer facilities and various monitors and should minimize the drain on memory resources. Questions also focused on price and ease of user training.

About 150 CICS users attended a session on CICS/VS application development systems held here by the Teltech Systems, Inc.-sponsored CICS Users Group. The session featured pitches from technical and marketing representatives for Multiplications, Inc.'s Accolade, IBM's DMS, Cincom Systems, Inc.'s Mantis, Pansophic Systems, Inc.'s MIS/OL and Oxford Software Corp.'s UFO.

Users at the conference also indicated that growing applications backlogs and a critical shortage of CICS programmers are forcing DP shop managers to turn increasingly to application development systems to hike productivity. And the need for this help has become more pronounced in the past year.

"We're a small staff without many people trained in CICS," said Arthur Cecchini, senior programmer/analyst at the Liggett Group, Inc. in Montvale, N.J. "Our users would like on-line applications but they're concerned about costs. We want to give them CICS accessibility without added cost."

Timely Fashion

And they want it quickly. "To me as a manager, my concern is getting the system up in a timely fashion," said Jay Eizik, a systems analyst at Guardian Life Insurance Co. in New York. Eizik said his shopping list included user-friendly features like Help screens and prompts, screen-building capabilities and low memory overhead. He was particularly interested in Accolade and MIS/OL.

Other users stressed that an application development system should be fully compatible with command-level code and popular programming languages. "We're very interested in programs whose resultant code is command-level Cobol," said Ken Martin, a consultant to National Benefit Life in New York. "That way we can modify the package on our own and use it for major development."

Calling predictions that application development systems will be in almost universal use by 1985 "overblown," Stanley Gordon of LTI Consulting Services in New York said the systems will be limited until the command structure on most application development systems is generalized to allow easier updating. Until then, he said, the packages will be limited to small application development.

However, one user said he intends to use an application development system for large-scale, on-line applications. "We are understaffed and it's difficult to find quality CICS programmers," said Frank Delmore, manager of technical support for National Benefit Life. "We hope this will make it easier to get production out of CICS." He said the company is actively looking at Accolade.

For the most part, users said their programming staffs actively supported buying an application development system. "Our programmers want more CICS involvement. If this is what it takes, this is how they'll do it," said Cecchini of the Liggett Group.

"Some of our programmers were concerned about being removed from CICS," said Eizik of Guardian Life. "But to me, speeding up development is more important than giving programmers more time to learn CICS."

Do You Use a Micro To Run Your Business?

Is a microcomputer helping you run your business?

Computerworld is preparing a Special Report on "Micros in Big Business" for its March 28 issue. If your business incorporates microcomputers in a way that significantly impacts overall data processing operations, CW would like to hear from you.

We are particularly interested in microcomputers that are directly attached to a large host processor, microcomputers linked through a communications network to a host processor and microcomputers linked together. We are also interested in ways that microcomputers are replacing larger processors or off-loading some of a mainframe's work load.

If your shop is doing any of these things, we would like to hear about it. Write a description of the application and send it by Feb. 1 to Tom Henkel, Writer/Analyst, *Computerworld*, 375 Cochituate Road, Box 880, Framingham, Mass. 01701. Articles must be typewritten, double spaced and no more than five or six pages in length. Accompanying graphs, charts and pictures are welcome.

Articles about stand-alone applications or those involving non-business applications, such as computer games, will not be considered.

CICS Users Assail 'DMS'

(Continued from Page 1)

cation development system. A recent survey found that 24% of one-time DMS users who responded have already converted to another product and another 40% of the respondents intended to convert [CW, Oct. 11].

With that apparently in mind, the tone of the IBM representatives at the session was noticeably conciliatory. "Enhancements are on the way to make it more friendly and usable," Wilkins said during his presentation. "I think it's usable right now. I think it could be more friendly."

John Brizendine, an IBM product administrator, said the company is now pouring resources into DMS in an effort to allay the fears of many current users. "IBM is giving a better guarantee that applications will be portable from release to release," he said. "We are using rigid specifications in order to deliver quality beyond what you would expect from most IBM software products."

However, the users interviewed indicated IBM had some convincing to do. "We are disappointed, and I'm here looking around to see what else is out there," said Rod Dorman, applications program manager with Citibank in New York.

Dorman criticized DMS for its difficulty in handling vertical-length files and for awkward coding. But he said he was buoyed by IBM's apparent interest in rectifying some problems. "It's bad enough we're a two-language shop without being a two-application-generator shop," he said.

Gordon, whose question sparked the impromptu gripe session, said he has never recommended that users look to DMS for application development. "From what I've been reading and hearing, I'm not going to recommend it in the near future, either" he said.

Ruling to Alter Dial-Up Fees

(Continued from Page 1)

crease will balance the increase. The interstate carriers are now paying local telephone companies about $8 billion for the Non-Traffic-Sensitive portion of local-exchange costs. Next year, the local telephone companies will collect about $4.3 billion of this amount directly from their customers.

Another unresolved question involves the size of the subsidy needed to make telephone service available in high-cost areas. A joint board composed of industry and FCC officials has been studying this matter and is scheduled to make a recommendation in March.

The carriers' contribution to local access costs also may create controversy. Under the plan, AT&T's Long Lines Division must pay $1.4 billion more than competing other common carriers for local access next year because the phone company gets better quality service. Long Lines is almost certain to want this charge reduced; its competitors, the other common carriers, would like it increased.

Reagan Proclaims '83 Communications Year

WASHINGTON, D.C. — In concert with a United Nations initiative, President Reagan has proclaimed 1983 "World Communications Year," a move he said is aimed at stimulating "economic and social progress around the world through accelerated expansion of communications and information services."

In a White House signing ceremony, Reagan called the U.S. telecommunications firms "path breakers in the most communications-intensive era in history" and remarked that the U.S. is "one of the few nations of the world in which telecommunications is still controlled by private enterpise."

He also noted, "The development of new technologies — such as computers, microchips, satellites, fiber optics — has revolutionized our concept of communications."

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'Info/Management' Malcontents Called Few

By Jeffry Beeler
CW West Coast Bureau

VIENNA, Va. — Most customers of IBM's Information/Management system are reasonably happy with the way the problem-reporting and configuration control product is supported, even though a few outspoken users are voicing dissatisfaction.

That observation comes from James Kaye, chairman of the Information System Product Committee within the industry giant's Share users group. Kaye, a systems programmer at Boeing Computer Services, Inc. here, took exception to a recent *Computerworld* article in which several of the vendor's largest West Coast users were quoted as saying they had asked IBM repeatedly to enhance the system with mass-updating and archiving/batch interface facilities, but that the requests had fallen on deaf ears [CW, Nov. 15].

In a recent telephone interview, Kaye said that although a minority of the product's users would probably disagree, for the most part IBM has been "extremely responsive" in meeting the changing needs of its Information/Management customer base.

Although Kaye conceded that some users desperately need mass updating and archiving facilities and acknowledged that IBM has assigned the proposed enhancements a low priority, he characterized those users as a small share of the vendor's overall customer base.

Matching Priorities

"The majority of the people who are willing to show up and participate at Share meetings feel that IBM's priorities [for future enhancements to Info/Management] exactly match their own," Kaye said. "The reason archiving and mass updating appear at the bottom of IBM's priorities list is that the majority of the users who have voted on the question [of future enhancements] put them down there."

First released about two years ago, Info/Management forms part of IBM's Information System offering, which runs under MVS and allows users to do first-level problem determination on-line. In essence, Info/Management provides companies with a data base that permits systems personnel to keep track of all unscheduled hardware, software and network outages that last longer than a specified period.

The product also records configuration changes and all interruptions of end-user computing services. The contents of Info/Management's data base can then be used by DP personnel to produce systems-availability reports for senior corporate executives.

DPMA Changes Cobol 80 Stance

(Continued from Page 1)

ward compatibility that has been at the heart of much of the opposition to Cobol 80.

Art Dubnow, chairman of DPMA's standards committee, told *Computerworld* last week that "DPMA does feel that the changes they have made now are substantial enough that the standard now can go out for public review and be questioned. DPMA is looking forward to a new dpANS X3.23-198x Cobol going out for public review again."

He stressed that there is still a "dichotomy" between what DPMA feels the standard should include and its present status. "We, the DP managers, in principle, want upward compatibility. On the other hand, we want advanced features," he said, adding, "We will never get 100% upward compatibility, but now it is ready for debate. If the benefits outweigh the disadvantages, our users will probably buy it."

"We have a number of alternatives, which they haven't really yet addressed, but I think they will. The important thing is that they heard us," he said.

Dubnow cited the strong industry response to the proposed standard as being key to the changes that already are being made. "We sent out the warning message and industry got involved and they are paying attention."

Response Deadline

He noted that any responses to the comments by X3J4 must be filed by Jan. 21.

Responses to the X3J4 comments should be sent to the X3 Secretariat, Computer and Business Equipment Manufacturers Association, Suite 500, 311 First St. N.W., Washington, D.C. 20001.

It is important for respondents to include the number assigned to them in the cover sheet of the package they received from X3J4, Dubnow said.

The next step is for X3J4 to review responses received by Jan. 21, make any further changes it feels are appropriate and then report to the X3 committee. The X3 committee will meet during its regular four-month intervals (February, June and October) and decide whether or not to send the standard out for public review. At this time, DPMA intends to conduct a thorough analysis and review of the changes to the proposed standard.

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From Operators to Executives

DP Turnover Blamed on Lack of Career Paths

By Bruce Hoard
CW Staff

NEW YORK — From computer operators up to top executives, the most common cause of turnover in the DP industry appears to be the lack of career paths, according to various experts interviewed last week.

"Ten years ago, people got to know everything from I/O control on up and got to deal with their own job control language utility problems," observed Art Lawrence, president of Comtek, Inc., a New York recruitment firm specializing in operations personnel. "Now, some companies have people handling only one portion of the input and never touching output." Such rigid departmentalization inhibits career growth, he maintained.

Lawrence said that when operations employees become disenchanted with their salaries, they tend not to tell their supervisors, searching out new positions instead. Employers are fighting operations turnover by providing two small raises a year instead of one large one and making counteroffers when employees announce their intentions to leave. However, the counteroffers are successful only about 50% of the time, Lawrence said.

He fixed the turnover rate for operations workers at about 20%, noting that New York has the highest operations turnover in the country because so many DP centers are concentrated in so small an area. "I know guys who have only had four jobs in their whole life and they have all been in the same building," Lawrence said.

Bob Stanton, president of Management Scientists, Inc., another New York recruitment firm that specializes in finding jobs for programmers and systems analysts, said his clients fix the turnover rate for programmers and systems analysts at between 10% and 20%. The primary causes of turnover among the two groups, he explained, are dissatisfaction with the working environment, dissatisfaction with salary and the failure of management to carry through on promises and maintain state-of-the-art DP shops.

DPers need to be working on sophisticated development projects, Stanton claimed; when they are not, or when they are doing only maintenance work, they may start looking for a new employer.

The state of the economy is one variable that affects turnover. In fact, the current recession has lowered the turnover rate during the past six months. Nonetheless, there is more turnover among programmers than systems analysts because "programmers are more in demand than straight systems analysts," Stanton claimed.

A number of companies are fighting programmer turnover by offering more staff meetings and technical education. They are also promoting from within, Stanton said.

On the other end of the job spectrum are the DP managers and top DP executives. They are a different breed than operations personnel, programmers and systems analysts, according to Bonnie Kaplan, DP placement manager with Robert Half Associates here.

She was reluctant to cite a turnover rate among DP managers and top DP executives, but called discontent with, and lack of support from, management the primary cause of turnover. "Corporate management sees DP as a cost center, not a profit center," Kaplan explained.

Fluctuations in the economy have a minimal effect on top-level DPer turnover, although executives may be willing to take more job-hopping risks in a healthy economic environment. DP executives are also always ready to consider job offers whether they are looking or not, Kaplan added.

His Turnover Rate: Less Than 5%

RICHMOND, Va. — At a time when many state-run DP shops are losing workers to the private sector, Bill Bell and the commonwealth of Virginia are turning the tables.

Bell is deputy director for systems development at the commonwealth of Virginia's Department of Management Analysis and Systems Development. His 112-person department is hiring DPers away from the private sector while at the same time maintaining an annual turnover rate of less than 5% over the last three years. He does it by providing well-defined career paths and counseling.

"We feel like the diversity of opportunities available for people here, allowing them to get broad exposure to the entire technical field, is one of the strong points that holds our turnover down to reasonable limits," Bell said.

Those opportunities include technical work in such hardware environments as IBM, Sperry Univac and Hewlett-Packard Co. In addition, the department also offers data base environments within each of those hardware environments, he said.

Involving DPers

Involving DPers in the decision process has also held down turnover. Bell referred to "team autonomy" and "program management teams" that espouse a philosophy similar to that embodied in the well-known "quality circle" approach to management.

He broke down his department into program managers, senior project managers, senior analysts, programmer analysts and programmers. Turnover tends to strike hardest at the senior analyst and programmer analyst level, he said.

"I find the primary cause of turnover in our organization is diminished challenge," Bell said. Defections have a tendency to come after DPers have finished work on sophisticated development projects and find themselves in a lull and doing maintenance and modification work, he added.

Bell noted that some state agencies cite the inability to pay salaries competitive with those in the private sector as a reason for losing employees. He said that is "no excuse."

Corrections

In "Relational DBMS Offered by Contel" [CW, Oct. 11], Contel Information Systems' product RTfile was mistakenly called "Rifle." RTfile is a version of Contel's interactive relational data base management system designed to run under Digital Equipment Corp.'s RT-11 and other operating systems.

Prices for Cobgen, a parameter-driven Cobol source code generator for IBM OS and DOS systems [CW, Dec. 13], start at $8,000. The price was incorrectly quoted as $8,000.

In "Enthusiasm, Four-Year DP Degree Win Job Offers in Data Processing," [CW, Dec. 20], the quotation regarding computer aptitude testing came from Joseph O'Dea, assistant vice-president at the European American Bank in Westbury, N.Y.

The correct title of the workshop that will be held March 4-6 in Harvard, Mass., and May 20-22 in Temple, N.H., by consultant Arthur Fink [CW, Dec. 20] is "Computers and Personal Values: Sharing From Experience." The lead speaker will be Joseph Weizenbaum, author of *Computer Power and Human Reason.*

March 4 Deadline For Auditors' Exam

CAROL STREAM, Ill. — The deadline for registering for the EDP Auditors Foundation, Inc.'s annual Certified Information Systems Auditor (Cisa) examination is March 4. The exam will be given April 9 at more than 50 U.S. and foreign sites.

The Cisa program was designed to identify people professionally competent in the integrated areas of auditing and DP. The exam was jointly developed by experts in the field and the Educational Testing Service.

The exam fee is $185. The EDP Auditors Foundation is at 373 S. Schmale Road, Carol Stream, Ill. 60187.

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Weather Service to Caterpillars: 'Told You So'

By Paul Gillin
CW Staff

CAMP SPRINGS, Md. — To those who figure sunspots, volcanoes and woolly caterpillars into their long-range weather forecasts, the winter prediction issued by the National Weather Service last November came as somewhat of a surprise. It predicted a season that would be milder than normal for much of the eastern U.S., contradicting frigid forecasts by many local meteorologists and venerable sources such as the *Farmer's Almanac*.

Now, with nearly six weeks of unseasonably mild weather in the eastern region behind them, the staff at the National Weather Service's Climate Analysis Center, which develops monthly and seasonal forecasts, is entitled to an "I told you so."

Although the center's Robert Dickson will not claim the staff's methods are any more scientific than others, he acknowledged that the accuracy of its forecast was a pretty good bet.

"We were fairly confident we had a good handle on this forecast all along," Dickson said. "In fact, all of our forecasters were in agreement about the general nature of this winter."

Complex Process

Such apparent prescience is really the result of a complex process which has increasingly relied on computers in recent years. Each day at thousands of sites around the world, information is gathered about climactic conditions of temperature, air pressure and wind direction at sea level, 10,000 feet and 40,000 feet above sea level.

Data from 400-plus field stations is sent to Suitland, Md., where it is fed first into a bank of IBM 360/40 and 4341 computers run by the National Weather Service and then into three IBM 360/195s belonging to the National Oceanic and Atmospheric Administration, the agency that oversees the Weather Service.

At Suitland, the 360/40s busily churn out daily maps displaying temperatures and conditions across the northern hemisphere. While forecasters there monitor the battles, the Climate Analysis Center observes the war.

Disregarding such passing anomalies as storms and low-pressure troughs, the center's staff of 50 concentrates on the more general patterns exhibited in the upper atmosphere.

"Our forecasts are based on analyses near the 10,000-foot level," Dickson explained. "That's about midway in the troposphere, where flow patterns begin to exhibit wave-like behavior. That is more useful in generating long-range forecasts."

Programs smooth out the day-by-day reports used by the Weather Service to prepare a series of maps and figures every 15 days, Dickson said. This output is key to preparing the monthly and seasonal forecasts the Climate Analysis Center issues at the end of each month.

The programs, written in Fortran IV by mathematician and analyst/programmer Dave Durdall, prepare charts of "observed conditions," or summaries of the previous month's climactic trends. The data comes in a compressed format from the 360/195s via the Weather Service and is printed in map form on Varian Data Systems, Inc. plotters in the Climate Analysis Center.

"The programs create a simple regression equation at each of 541 points around the hemisphere using data dating back to 1947," Durdall said. For a monthly forecast for January, for example, the computer sorts 35 years' worth of data and constructs a mean data field for December. The system then plugs in the most recent December data and, accessing the base again, turns out a map showing statistically what January should look like.

But lest it seem that the computer is doing all the work, Dickson pointed out that this stage is merely a handoff to a team of four Climate Analysis Center forecasters. "It's still very strongly a man-computer mix for now," he said.

The computer-generated maps are just a guideline, Durdall said, and not every variation in the data field is significant. So the 20 to 25 different charts which roll off the plotter include correlation fields that meteorologists use to determine what will affect the weather in the long term and what is just a passing phase. "The forecasters look at the correlation fields and, using statistical analyses, decide which anomalies they are going to trust," Durdall said.

What the forecasters saw late last November left little room for doubt, Dickson said. "The fall season gave a strong suggestion of a strong upper level pressure ridge along the Western Atlantic persisting into the winter season," he said. "Statistical relations suggest that this is one of the most reliable features there is" in predicting a mild winter.

Dickson cautioned that even with the benefits of modern technology, "It's an incomplete forecast without our indications of the probability of success," which usually run from 50% to 75%. "The nature of the beast is that we're able to predict temperatures on the right side of normal about 65% of the time," he conceded. "But it beats the flip of a coin."

Do you have some questions about VSAM file handling in COBOL?
Then here's the book for you...

Just published:
VSAM for the COBOL Programmer

If you have to work with VSAM files and you're unsure of what you need to know about them, then you should get a copy of *VSAM for the COBOL Programmer*. Just as its title implies, this practical, how-to guide will teach you all the basics of handling VSAM files in COBOL.

The first chapter is an introduction to VSAM. It talks about VSAM's advantages ...and drawbacks...and introduces you to the common terms you'll need to know before you can continue.

Chapters 2 and 3 are the meat of the book because they cover VSAM key-sequenced files. Key-sequenced files are equivalent to ISAM files on a non-VSAM system, and they make up about 95% of all VSAM files.

Chapter 2, then, explains the COBOL elements you need to know for key-sequenced files. And it gives in-depth coverage to handling the errors that can occur when an I/O statement is executed for a VSAM file. In addition, it tells you how to code the OS JCL you need for COBOL programs that use VSAM files... and why the JCL is so much simpler than it is for ISAM files.

Chapter 3 covers IDCAMS, the Access-Methods-Services program. This is the utility program you must use to set up disk space for a VSAM file before you can even create the file in a COBOL program. In addition to learning how to set up file space, you'll learn how to use IDCAMS to: copy, print, and rename VSAM files; load a VSAM file from a non-VSAM file; and list and maintain a VSAM catalog.

Once you've mastered the material in chapters 2 and 3, you can quickly go through chapters 4 and 5. They cover the COBOL, JCL, and IDCAMS considerations for entry-sequenced and relative-record VSAM files. These are equivalent to sequential and relative files on non-VSAM systems.

Throughout chapters 2-5, the learning is geared toward the OS user. In fact, chapter 5 is for the OS user alone, since DOS VSAM doesn't support relative-record files.

But chapter 6 is devoted to the DOS user. It presents all the variations you need to know about if you're working on a DOS system. So here, you'll learn how the COBOL code, the JCL, and the IDCAMS statements differ from OS. And I think you'll be surprised at how few differences there are.

In short, then, by the end of the book you'll have a thorough grasp of what you need to know to write COBOL programs for VSAM files.

2 reasons why this book is effective

1. The author of this book, Doug Lowe, selected the content based on an analysis of what a COBOL programmer needs to know about VSAM. That means this book contains everything of use to the average COBOL programmer and very little that isn't. It also means you can learn significant VSAM skills...and find the answers to your VSAM questions...in a minimum of time.

2. Perhaps the most important feature of this book is that it contains plenty of examples, so you always see just what the author is talking about. Examples like:

- COBOL listings for file-creation, update, and print programs
- summaries of the codes that can occur in the FILE STATUS field after an I/O statement has been executed...along with recommendations on what action to take when an I/O error occurs
- DOS and OS JCL for running VSAM COBOL programs
- IDCAMS statements for creating, printing, copying, and renaming VSAM files
- JCL for using the ISAM interface program supplied by IBM

There are over 50 illustrations in all, designed to help you learn about VSAM...and to serve as models when you're coding VSAM jobs on your own.

So why wait?

If you're not sure of all the answers when it comes to VSAM file handling in COBOL, get a copy of *VSAM for the COBOL Programmer* right way. I think you'll be surprised at how much knowledge you can get for $15.

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Dear Mike: Please send me the books indicated below. They must teach me the COBOL subjects I want to learn, or I'll return them at any time for a full refund.

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Equitable Life Program Gets Top Management To Listen to DPers' Concerns

By Marguerite Zientara
CW Staff

NEW YORK — Effective communications between DP and upper management at Equitable Life Assurance Society of the United States has resulted in "a tremendously increased awareness at the senior level of issues regarding computing in the 1980s." That is the conclusion of James Johnson, vice-president and innovation officer for the firm, who has taken on the job of keeping top management abreast of changing technologies.

How did the company achieve the elusive "effective communications"?

The first step was taken last April, when Johnson was asked to give a presentation to Equitable's 12 top officers, including the chief executive officer. He was expected to explain innovations in computer technology and demonstrate the need for the DP department's expansion.

"I had given a number of presentations before, but it was the first time I had given one to the senior executives," Johnson noted. "I had hundreds of ideas and it was a real problem sifting them down to what was really significant to senior executives.

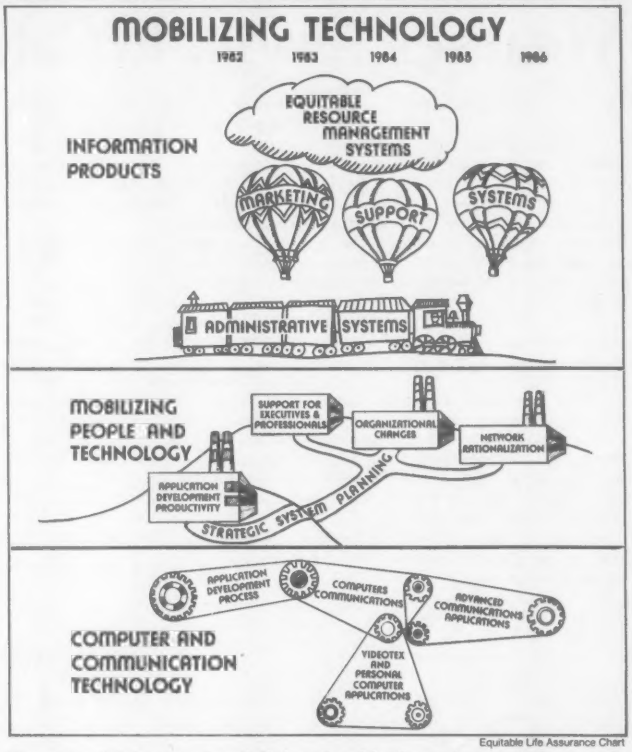
"Technical people like myself tend to be process-oriented and executives are results-oriented," he observed. "So it's hard to get that shift into the results-oriented mode that makes it interesting to them."

Johnson looked to an executive training firm here that he had worked with a number of times, Peter Rogen & Associates, Inc. Trainer Bob Thomas "has done quite a bit of consulting to senior management, including the senior management of Equitable," Johnson explained, "so he was able to look at things from the management perspective and see if I was making sense from their point of view."

Most of the top officers "were familiar with how computers had been used to merchandise administrative systems," Johnson said. "Now I was asking them to endorse and 'sponsor' market support systems and Equitable decision support systems — programs they knew very little about."

Working together, Thomas and Johnson analyzed the Equitable decision makers' needs, defined the objective of the presentation and developed visual support materials that would convey the message effectively (see illustration).

"The technique is to mock up the entire presentation in one flip chart, organized in such a way that it really forces you to cut it down to the crucial ideas," Johnson explained.



Equitable Life Assurance Chart

Thomas and Johnson, after defining the objectives of presentations made by Equitable's decision makers, developed visual materials like this.

"It's a mechanical technique in some respects," he added. "It's almost like drawing an empty flowchart in a prearranged format. In other words, the presentation starts out with a format and you have to fit the thing into it.

"The discipline of doing that forces you to examine what's really important. It tends to create a presentation that has an objective and a conclusion and a few main points that are appropriately amplified," he noted.

"The process of making the charts helped me get a very clear image of what it takes to mobilize technology," he noted.

"For example, the three main themes are the information products, the computer and communication technologies that support those products and the effort to mobilize the people and technology so we can change direction.

"Those things are not only important, but are things that executives can grab onto," he noted.

One tactic Johnson used in getting his ideas across to top management began two months before his actual presentation. "I had a chart that was about 5 feet by 7 feet with all the technologies and products that we expected to see over the next five years and I just left it in the board room," Johnson recalled.

"People were able to make their own interpretations of all the things that were going on and it really was quite a talking point around the company for quite a while," he noted. "So that, even without the presentation, people were able to visualize what was going on."

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Three WP Typists at Ford Named in Betting Operation

By Jim Bartimo
CW Staff

DEARBORN, Mich. — A $5,000-a-week gambling operation at Ford Motor Co. that allegedly involved 300 employees and the company's word processing equipment ended last month with the arrest of three clerk typists in the Engineering Department. The word processing equipment was reportedly part of a $25,000-a-week gambling operation involving about 500 employees that may have also entailed use of Ford's data processing operation.

The three employees arrested last week — Cheryl Bennett, David Jacek and Donald McNutt — were charged with conspiracy to violate state gambling laws and will be arraigned later this month. All three have been fired by Ford.

Ford's own security force alerted the police about the gambling pool, reportedly active since mid-1980. Bennett operated the word processor "to align, format and organize a football pool," Sgt. Ron Mattioli of the state police Criminal Investigation Section said. An investigation has been launched to determine the extent of computer use in these activities, Mattioli added.

"They were into horses, bowl games and a lot of other things," Mattioli said. "I've heard rumors of $25,000 per week. There was one guy who was making $1,000 per week."

A Ford spokesman refused to comment on any aspect of the arrests.

While many offices have football pools, the state plans to prosecute the three involved in this one because of its size. "They were printing the [betting] tickets and we prosecute that," according to Dick Tadzieski, chief of the Criminal Division in the Wayne County prosecutor's office.

"Just as a matter of background," Tadzieski said, "we broke a gambling ring where we knew that the printouts were coming from the GM [General Motors Corp.] text center, but we couldn't prove it. So I guess computers play a role in figuring out the odds for these things."

As word and data processing proliferate, office automation experts have both feared and predicted that the office equipment would be used for purposes other than those for which the equipment was designed. "As we distribute these smaller systems, it will be recognized as a perk — like a [copy] machine," according to Lynn McNulty, director of information systems security for the U.S. Department of State.

"The more you distribute this equipment, the more people see a relationship between their work and their personal business," McNulty said. "I've seen places where people were using the system to do their own commodities forecasting — anything you can think of — little league scores, bowling leagues."

The irony is that businesses often perceive the misuse of equipment as a need for more hardware, McNulty said, and they purchase additional CPU power for the personal business of their employees.

Former Employee Charged With Tapping Fed's Data Bank

WASHINGTON, D.C. — The Justice Department last week filed wire fraud charges against a former Federal Reserve employee for allegedly accessing a Federal Reserve data bank after leaving the government to work for a large New York brokerage firm.

The former Federal Reserve economist, Theode C. Langevin, said he will plead guilty to the charges, according to a Jan. 6 report in *The New York Times*.

In a filing with the federal court here, prosecutors charged Langevin with using the name and password of another agency employee to gain access by telephone to "sensitive and confidential information relating to . . . the money supply as projected by the [Federal Reserve]." This allegedly occurred sometime in late November, shortly after Langevin went to work for E.F. Hutton & Co. in New York, the government said.

Federal Reserve officials reportedly noticed the improper access of the computer and waited for a second attempt, which led them to Langevin. The money supply projections are the basis for Federal Reserve interest rate actions.

The one count of wire fraud carries a maximum sentence of five years in jail and a $1,000 fine.

ABA Directory Lists Law Office Programs

CHICAGO — A directory of programs and computer applications has recently been compiled here by the American Bar Association's (ABA) Economics of Law Practice Section.

Called "Locate: A Directory for Purchasers of Law-Office Computer Applications and Software," the annually updated text reportedly profiles over 100 vendors and their product offerings. It concentrates on such software products as timekeeping packages and litigation support.

This reference guide costs $28 from the publisher at 1155 E. 60th St., Chicago, Ill. 60637.

Rather Than Later

Lawyers: Seek Legal Aid During Contract Talks

By Jim Bartimo
CW Staff

A Midwestern publishing company bought a computer in September 1978 without the aid of a lawyer. Two years later, the company was so unhappy with the computer's performance that it filed suit against the vendor.

Early this year, Quality Books, Inc. will face off against Burroughs Corp. in one of the most watched court battles in the computer industry.

Would a lawyer's services have saved Quality Books from a lengthy legal battle? Is it always necessary for the DP department to bring in a lawyer when making a purchase?

Legal Advice

Lawyers contacted by *Computerworld* offered their advice to DP managers about when and how to use a lawyer in the purchase of computer hardware and software.

"Had Quality Books had a contract early on, we would have known very soon that something was fishy," according to Quality Books' present representative, Marvin Benn of the Chicago law firm of Hamman, Benn and Miller.

Benn believes a lawyer should be brought in if the hardware purchase totals more than $30,000 or if the software purchase is over $10,000. "Depending on the amount of money involved, they [users] should draw up a request for proposals [RFP]," he said. "I don't help them make the choice, I put certain things into the RFP" and allow the users to look it over.

"The basic advice is to get a lawyer involved as soon as possible," an attorney for a large software company added. Because this particular lawyer is usually on the other side of the negotiating table from the DP manager, he asked not to be mentioned by name, but offered his advice.

A lawyer can make sure the software company does everything it promises and deal with regulatory agencies. The issues can often be extensive legal ones, the lawyer said. "You need a lawyer when you're buying a customized piece of software or when buying an off-the-shelf piece of software." The major difference is that there is more room for negotiation when buying customized software.

"With respect to off-the-shelf software, it's a little less important to have a lawyer, but it's important to have a lawyer at least look at all the contracts and licenses," the software company lawyer said.

Forty Questions

Once a vendor is selected, Benn asks the user some 40 questions and incorporates his needs into the contract. "Most lawyers don't know the questions to ask," he said. "You have to have a lawyer with a computer background."

Computer lawyer August Bequai said that he "always advises clients not to overuse lawyers because they're expensive." He also recommended that users investigate their internal legal department before going outside.

The fee structure for a lawyer's services often reflects his overhead rather than his ability. Big isn't always best, according to Bequai, who said fees range from $100 to $250. "I can tell you that you can get the same services for $100 that you get for $250 if you shop wisely."

Once the user has hired a lawyer, he should "make sure to get his personal involvement — not an associate just out of law school," Bequai said.

Part of a lawyer's job in drawing up a contract is negotiating price and services to be rendered by the hardware or software purchased. While Bequai warned that lawyers often have "a tendency to get involved in overkill" when it comes to negotiations, Benn said negotiating is imperative to determine who is responsible if something goes awry.

"It's well worth it when you consider the damage that can be done," Benn added.

When dealing with lawyers, the DP manager should remember that not all legal experts are computer experts and should not be expected to make the actual decision on which product is best. "He can't possibly know the corporate planning and strategy," Bequai observed.

Benn agreed with this, adding, "A lot of lawyers have a technical anxiety. We're trying to educate lawyers, but it's hard because computers are a foreign language to them."

Call for Papers

ASSOCIATION FOR COMPUTING MACHINERY (ACM) '83, New York, Oct. 24-26.

ACM is inviting tutorials, proposals for panel discussions and technical papers or surveys to be presented at the conference. Suggested topics include business applications, personal computing, software development, privacy & security, electronic funds transfer, office automation, graphics, hardware innovations, data base systems, simulation, data communications, education, artificial intelligence, computers & society, history of computing.

Authors of papers should submit four copies of their work, typed and double-spaced, not exceeding 12 pages. The deadline for submission is March 7. Authors will be notified of acceptance by May 1.

Papers should be sent to Thomas A. D'Auria, ACM '83 Conference Chairman, City of New York, Computer Services Center, 111 Eighth Ave., New York, N.Y. 10011.

CALIFORNIA EDUCATIONAL COMPUTING CONFERENCE (CECC) '83, San Francisco, Nov. 17-18.

CECC is calling for papers on computers and applications that might be of interest to instructors and administrative personnel involved with computers at the college or university level.

Send two copies of original papers to Fred Ostapik, Director, Computing Services and Institutional Research, San Francisco, 1600 Holloway Ave., San Francisco, Calif. 94132.

INTERNATIONAL ASSOCIATION FOR SOCIAL SCIENCE INFORMATION SERVICE AND TECHNOLOGY (Iassist) '83, Philadephia, May 19-22.

Iassist is soliciting papers on a variety of topics of interest to social scientists, data archivists, librarians, research administors and government records managers. Fifteen papers will be presented in the areas of data services, hardware and software and data files.

A letter of intent or abstract should be sent by Feb. 15 to Sue Dodd, Program Chair, Institute for Research in Social Science, Room 25, Manning Hall 026A, University of North Carolina, Chapel Hill, N.C. 27514.

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Bank DPers Get Interest Reporting Reprieve

By Lois Paul
CW Staff

WASHINGTON, D.C. — DP managers at banks and securities firms received a small reprieve from the Internal Revenue Service when it announced late last month that it is delaying penalties for failure to meet new reporting requirements for interest payments from certain securities.

The Tax Equity and Fiscal Responsibility Act of 1982 stipulates in its "withholding at the source" section that as of Jan. 1, securities firms and banks had to report interest earned by customers on unregistered securities and government obligations. A number of banks expressed problems with meeting this deadline because of the enormity of changes in information-gathering techniques and software required by the law [CW, Nov. 22].

The IRS will waive until April 1 the penalties for failing to report interest on unregistered corporate obligations or U.S. Treasury bills sold at a discount. The interest received by the owner of these short-term securities is basically the difference between the original selling price and the face value that is paid at redemption.

The penalties for failing to comply with the rule for reporting interest on longer term securities will not be enforced until July 1. An IRS spokesman explained that the agency recognized it is difficult for banks and brokers to know the original selling prices of these securities and, therefore, the size of the discount.

The organizations that do not comply with the reporting requirements will be examined on a case-by-case basis. Waiver of the penalties will depend on whether they have made a good-faith effort to comply with the law, the IRS said.

Responding to the IRS announcement, Fritz Elmendorf, assistant director of public relations for the American Bankers Association, which is leading the opposition to the new regulations, said, "We weren't overwhelmed by their [the IRS'] generosity, but they did act in recognition of real problems.

"None of this means that they could be expected to be soft on the ultimate July 1 deadline," he added, referring to the deadline for compliance with the second part of the "tax withholding at the source" legislation. This requires banks to withhold a flat 10% from dividends and interest-earning accounts and pay that 10% directly to the IRS.

Ansi Seeking Views on DIS For Info Systems

NEW YORK — The American National Standards Institute (Ansi) is seeking comment by Feb. 26 on the Draft International Standard (DIS) on information systems that is currently being considered for approval by the International Standards Organization (ISO).

The draft standard specifies elements of data link control procedures for synchronous, code-independent data transmission using the high-level data link control frame structure.

A copy of "ISO/DIS 4335, Data Communications — High-level Data Link Control Procedures — Consolidation of Elements Procedures" costs $15. It can be obtained from Ansi's International Sales Department.

Comments on the standard should be sent by Feb. 26 to Daniel W. Smith, director of operations, American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

IBM's Rakine Voted Ansi Head

NEW YORK — L. John Rakine, director of standards and data security at IBM, was unanimously elected president of the American National Standards Institute (Ansi). His term began Jan. 1.

Jerome B. Schapire, president of the Dixo Company, Inc., was elected Ansi vice-president. Crifton R. Williamson, assistant vice-president of AT&T, and Richard J. Finegan, vice-president of Liberty Mutual Insurance Co., continue as Ansi vice-presidents.

Rakine has been a vice-president of Ansi since 1980, a director since 1973 and is a member of the board of trustees' executive and finance committees. From 1971 through 1979 he chaired Ansi's International Standards Council.

User Group Formed On Office Systems

PITTSBURGH, Pa. — An office systems user group is currently being formed for users of office automation, office systems planning, micromedia and electronic office systems.

Spokesman Ron R. Cassa said formation depends on the number of people interested.

Cassa can be contacted at Water Reactor Divisions Office Systems Planning, Westinghouse Electric Corp., Box 355, Pittsburgh, Pa. 15230.

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The customer service software people

Future DBMS Seen Handling Symbols, Graphics

NORWALK, Conn. — Developments in data base management systems (DBMS) are leading to software designed to handle graphics and picture/language symbols, in addition to traditional numbers and textual data, according to a recent report from International Resource Development, Inc. (IRD).

The consulting firm's 155-page study predicts rapid growth in the market for DBMS software packages, even though some of the market will be preempted by "back-end processors" intended to reduce the processing load on the mainframe computer.

According to IRD, IBM is the leading supplier of mainframe DBMS software, followed by Cincom Systems, Inc., Cullinet Software, Inc. and Software AG of North America, Inc.

Rapid Growth Forecast

Particularly rapid growth is forecast for the use of data base software packages for microcomputers. Major contenders in this market include Ashton-Tate, Micro Data Base Systems, Inc., Micropro International Corp. and Software Publishing Corp.

The report noted that the major trends in DBMS software over the past 15 years have been toward relational systems designed to handle increasingly less structured data. "The next step in this development process will include the ability to deal with 'stream of consciousness' information, including audio (recorded telephone conversations, for example) and graphics (from facsimile transmissions, and so forth)."

According to IRD researcher David Ledecky, "the current guiding concept at IBM is the compound document, in which a document in the data base may be comprised of text, audio, pictorial or numerical information." Ledecky believes that IBM and other firms are working on intelligent DBMS software, which will include signal-processing capabilities allowing it to transform data from one form to another. "Soon the user will be able to ask his DBMS software to give him answers in spoken or graphics form; probably the use of graphics will evolve into interactive iconic exchanges with the computer," he added.

I/O Changes Needed

This evolution of DBMS software will require changes by computer manufacturers in I/O processing to comprehend and quantify icons, he continued. The need to transmit whole images, rather than line-by-line text, will call for increased processing speed. New forms of data base storage units will also be needed.

He suggested that changes in the educational system may be required to accommodate the shift to the use of symbols. "Instead of trying to improve literacy in the form of written language, we may have to develop more symbolically oriented educational formats that teach youngsters to think and communicate more in terms of images than in words."

The report, titled "Data Base Management Systems and Backend Processors" (No. 518), is available for $985 from IRD. Further details, including a free description and table of contents, can be obtained from the firm at 30 High St., Norwalk, Conn. 06851.

Survey Released On Software

PHOENIX — Featured in the December issue of the "EDP Performance Review" is the "Tenth Annual Survey of Performance-Related Software Packages," covering over 300 software products from 100 suppliers.

Published by Applied Computer Research, Inc., the software products are grouped under nine general categories, such as communications, hardware monitors, job accounting, operations management and utilities. Basically, the products provide either performance measurement capabilities or direct performance improvements, a spokesman said.

An annual subscription to "The EDP Performance Review" costs $75. The software survey is available separately for $20 from the publisher through P.O. Box 9280, Phoenix, Ariz. 85068.

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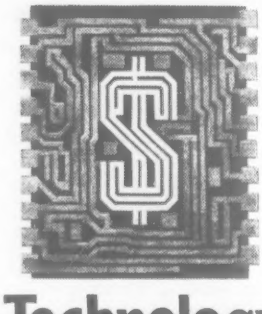

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Managers on the Move

David Hersh

Donald Macdonald

John Keelin

Alan Frotman

DAVID J. HERSH has been named manager of engineering information systems and DONALD MACDONALD has been named assistant director of management information systems (MIS) for Air Products and Chemicals, Inc., an international supplier of industrial gases, process equipment, chemicals and engineering services in Allentown, Pa.

Hersh will be responsible for program management of the company's Process System Group's engineering information systems development. He will also provide coordination of computer-aided engineering systems on a corporationwide basis.

Hersh holds a B.S. degree in chemical engineering from Drexel University and an M.S. degree in chemical engineering from Lehigh University.

Macdonald will be directly responsible for MIS development, office automation, data resources and MIS long-range planning activities. He joined Air Products in 1974 as manager of MIS Europe and was director of that division prior to his recent appointment.

Macdonald holds a B.S. degree in mechanical engineering from Strathclyde University, Scotland, and a degree in advanced business management from the University of Manchester Institute of Science and Technology in the UK.

▪▪▪

JOHN M. KEELIN has been appointed vice-president of information systems for Dravo Corp., a diversified company in Pittsburgh, Pa., engaged in engineering, construction, natural resources development, manufacturing and transportation. He will devote his initial efforts to the further development of Dravo's information and control systems.

Keelin has spent the past 12 years with the Eastern Gas & Fuel Association, where he most recently served as vice-president of financial and systems operations for Eastern Association Coal Corp., an Eastern Gas & Fuel subsidiary. He also has held positions as MIS director and controller for Midland Enterprises, Inc., also an Eastern Gas & Fuel subsidiary.

He graduated from Boston College.

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ALAN FROTMAN has been appointed director of information services for the American Institute of Certified Public Accountants in New York, a national professional organization of certified public accountants. He is responsible for the institute's data entry, processing and programming and systems.

Before joining the institute in 1972 as manager of computer services, Frotman was a senior accountant at the public accounting firm of Haskins & Sells. Previously, he was senior internal auditor with American Broadcasting Companies.

Frotman received a B.S. degree in accounting from Brooklyn College.

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FCC Rules on Customer Premises Equipment

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — Bell operating companies can continue providing new customer premises equipment to physically disabled customers, the Federal Communications Commission (FCC) decided last month.

In a related proceeding, the FCC also decided that Teletype Corp., an "unseparated" AT&T subsidiary, will not be allowed to market new customer premises equipment after the end of this month.

Underlying both rulings is a provision of the Second Computer Inquiry Decision that says all customer premises equipment as well as all enhanced services offered by AT&T must be marketed through a separate subsidiary unless the company obtains a waiver. As a result, since Jan. 1 customers wanting new terminals from AT&T have had to buy them from the company's new subsidiary, American Bell, Inc., rather than from their local telephone companies.

However, the FCC is being pressured to let the Bell operating companies resume marketing of new customer premises equipment. In November, FCC Commissioner Joseph Fogarty said his colleagues should declare that Computer II's separate subsidiary provision does not apply to the Bell operating companies; Glenn Watts, president of the Communications Workers of America, gave them essentially the same advice.

Watts argued that although the Bell operating companies will be allowed to sell new customer premises equipment after they are divested early in 1984 as a result of the U.S. vs. AT&T antitrust settlement, they may choose not to do so because of the heavy start-up costs. As a result, he said, users will encounter "unforeseen difficulties" in meeting their needs.

Subsequently, key members of the House of Representatives Telecommunications Subcommittee, in letters to FCC Chairman Mark Fowler, agreed that the Bell operating companies would suffer if not allowed to market new customer premises equipment before divestiture. But the congressmen pointedly avoided saying whether the Bell operating companies should be required to establish separate equipment marketing subsidiaries.

The forces opposed to letting the Bell operating companies market customer premises equipment directly are led by the North American Telephone Association, which represents independent manufacturers of telephones, private branch exchanges and related equipment. They fear that unless forced to establish subsidiaries, the Bell operating companies will be able to cross-subsidize surreptitiously their charges for new customer premises equipment with revenue derived from regulated services, thereby undercutting independent competitors.

Another fear is that allowing the Bell operating companies to offer new equipment directly will lead to total abandonment of the separate subsidiary provision of the antitrust settlement and enable AT&T as well as the Bell operating companies to offer both customer premises equipment and enhanced computer-based services directly.

The commission's position, as stated by Fowler at a House Telecommunications Committee hearing last month, is that it will consider letting the Bell operating companies offer customer premises equipment directly, but only if AT&T first submits a request for waiver of the Computer II rules. That's what the phone company did in both of the cases decided by the commission last month.

Datacomm Briefs

MCI to Begin Laying Fiber-Optic Cable System

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — MCI Communications Corp. within the coming year will begin building up to 4,000 miles of fiber-optic cable to link Philadelphia and Chicago with Miami and all the other major population centers in the southeastern U.S. The new circuits will be laid alongside the tracks of CSX Corp., which operates a 27,000 mile railroad network in the area.

The CSX agreement came shortly after MCI worked out a similar arrangement with Amtrak. That fiber-optic cable network, which is to be completed between Washington, D.C., and Philadelphia by the end of this year and extended to New York by March 1984, will add 40,000 circuits to MCI's East Coast transmission plant, quadrupling its capacity.

The first fiber-optic circuits to be laid within the CSX right-of-way will run from Washington to Chicago, an MCI spokesman said. He expects this facility to be completed before the end of 1984.

AT&T, Justice Join to Ask High Court Review Accord

WASHINGTON, D.C. — AT&T and the Department of Justice have asked the U.S. Supreme Court to review the antitrust settlement agreement they negotiated last year. Fourteen states that contend the agreement is unconstitutional had already filed a similar request.

Both camps have asked the Supreme Court justices not to refer the case to the U.S. Court of Appeals before considering the issue themselves. A decision on this latter question is expected shortly.

The states said the key question is "whether a federal court [i.e. the U.S. District Court, which accepted the settlement agreement], acting pursuant to jurisdiction conferred by the Sherman Act, may enter a decree that commands parties to ignore or violate valid state law."

Judge Finds for AT&T Against SPCC

WASHINGTON, D.C. — Federal District Court Judge Charles Richey last month decided AT&T is not guilty of anticompetitive conduct against Southern Pacific Communications Co. (SPCC).

Richey's 602-page decision was eagerly embraced by the lawyers defending AT&T against an antitrust suit being prosecuted by MCI Communications Corp.

"It's the same case," said AT&T lawyer George L. Sanders. He added that Richey's decision will be filed with the appeals court that is now considering an earlier lower court decision that upheld MCI's charges against AT&T and fined the phone company $1.8 billion.

General Dynamics Hits AT&T With Antitrust Suit

WAHINGTON, D.C. — General Dynamics Corp. has filed an antitrust suit against the telephone company. Similar in many respects to the MCI complaint, General Dynamics' brief alleges that throughout the 1970s, AT&T intentionally frustrated competition by insisting that independently made "foreign attachments" to the dial-up network be connected through couplers obtainable only from Bell.

Furthermore, the General Dynamics suit maintains, the couplers were "intentionally" designed to be "unsuitable for their purpose," and Western Electric maintained an insufficient inventory. The complaint also says that AT&T, while insisting that the couplers be installed by Bell technicians, did not adequately train them to do the job.

In 1978, despite what General Dynamics charged were stalling tactics on the part of the phone company, the Federal Communications Commission decided the coupler was unnecessary and replaced it with the present equipment testing/certification program.

The suit alleges that General Dynamics' efforts to sell telecommunications equipment to Bell operating companies were thwarted by "illegal" agreements. One such agreement, according to the complaint, enabled Western Electric to act as the operating companies' purchasing agent for independently made telecommunications equipment. Western Electric purchased the equipment, then resold it to the operating companies after adding a markup, General Dynamics said. The firm contended that this arrangement frequently made its products appear more expensive than those manufactured by Western Electric.

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Called 'False God,' a 'Monster'

Senate Panel Criticizes Computer Matching

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — The unrestrained use of computers to enforce government program efficiency is a "false god" and an uncontrollable "monster," members of a Senate subcommittee said last week during hearings on federal use of computer matching.

While saying the goverment "must not reject matching as a concept or the computer as a tool," Sen. Bill Cohen (R-Maine), chairman of the Government Management Oversight Subcommittee, warned that "we are rapidly approaching the day when the human voice will not be able to be heard over the whir of the computer."

Cohen's panel held two days of hearings on the proliferation of federal and state agency matching projects, in which various automated files are compared to detect unlawful benefit recipients. Reagan administration officials supported the use of matching to deter fraud in government programs, but suggested that legislation may be needed to stop abuses of matching and to foster increased use of properly designed matching programs.

Thomas F. McBride, Stanford University law school associate dean and former head of the administration's computer matching project, said the justifications for some matching projects are "distortions of the intentions" of the Privacy Act of 1974. He suggested that properly legislated data sharing guidelines mean program administrators would not have to "go behind the barn to get the data by questionable means."

A panel of privacy advocates, however, told the subcommittee there is little justification for the bulk of past and current matching programs. John Shattuck, national legislative director of the American Civil Liberties Union, said federal guidelines on matching cannot be reconciled with the Privacy Act and called for a moratorium on all use of matching until Congress can study "the long-term consequences of further developing this technique."

Shattuck argued that matching is an unconstitutional general search of the records of large numbers of citizens, whose presumption of innocence is being denied without due process of law. Matching, he said, "is not based on any pre-existing evidence to direct suspicion of wrongdoing to any particular member of the category of people whose records are to be matched.

"While it is true that systematic searches of personal records are not as intrusive as door-to-door searches of houses or places of business, the result is the same: a massive dragnet into the private affairs of huge numbers of people," Shattuck contended.

Privacy advocate Robert Ellis Smith concurred with Shattuck, saying that while there are legitimate matching uses, many projects are legally and ethically improper and often not cost-effective.

During a two-hour exchange between Cohen and subcommittee member Sen. Carl Levin (D-Mich.), McBride and Richard P. Kusserow, Department of Health and Human Service inspector general, argued that matching is necessary to ensure the efficiency of government programs. McBride said at one point that matching is "less intrusive" than other methods of verifying program eligibility.

Kusserow also argued that the concept of matching should not be blamed for what he called the excesses of some matching project administrators. He was referring specifically to a recent match of welfare rolls and bank accounts in Massachusetts, which resulted in benefits termination notices being sent out in cases in which individual welfare recipients apparently had more assets than allowed for welfare eligibility.

Cohen worried aloud that relying on computers to police government programs naturally gives rise to excesses and asked, "Where is the oversight of these computers?" Kusserow agreed, "we have an obligation . . . to tame these machines, to make them do what they're supposed to."

Levin said matching is, in theory, proper for administering govern-

(Continued on Page 18)

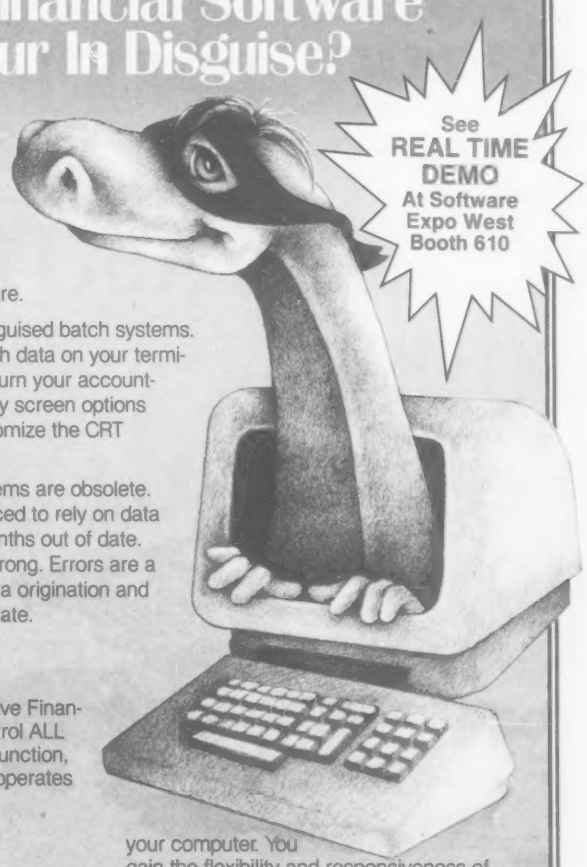
Workshop Set On System/38

INDIANAPOLIS — An intensive two-week IBM System/38 programming workshop will be conducted here by Data Processing Services, Inc. beginning Feb. 7.

Topics to covered include System/38 architecture, security, utilization of direct-dialing service, externally described files, query and commands.

Class size will be limited to 10 individuals and tuition is $1,575. Further details can be obtained from Data Processing Services, Inc. at 8604 Allisonville Road, Indianapolis, Ind. 46250.

Real Time Financial Software Or A Dinosaur In Disguise?



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Attorney: More Privacy Legislation Necessary

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — The U.S. Constitution affords American citizens very little privacy protection, and even the 1974 Privacy Act, which supposedly governs federal use of personal records, is "essentially unenforceable," according to the former general counsel of the Privacy Protection Study Commission.

Ronald L. Plesser, now in private law practice here, told Congress last week that additional legislation may be necessary to protect individual rights when dealing with the recordkeeping and data sharing practices of government agencies. He spoke during Senate hearings on federal use of computer matching to ensure government program integrity.

Examining the relevance in a computerized society of the Fourth Amendment's guarantee against unreasonable searches, Plesser concluded that "the Constitution gives little, if any, protection to an individual and . . . we must look to legislative solutions, governmental mechanisms and congressional oversight to protect the interests of privacy in our society."

The result of recent court rulings on personal record privacy, especially banking records, he said, indicates "the Fourth Amendment probably cannot survive the technological age." He continued that "in matching programs there are no Fourth Amendment protections. Searches of the records of individuals are no longer limited by the word 'reasonable' as envisioned by the framers of the Constitution."

The tragedy is "that there is no one in the government with the role of enforcing or even overseeing privacy standards," Plesser added.

Matching Evaluated

(Continued from Page 17)

ment programs, but he said the unrestricted use of computers could create an out-of-control "monster . . . We probably can't jump to conclusions, but we better come to some before this technology absolutely consumes us, invading our privacy, dehumanizing us."

Cohen said, "we must not fall down and pray to a false god — the sort of idolatry of looking to efficiency only . . . If you sacrifice privacy to efficiency, you're quite likely to have neither."

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Than in Technical Areas

Exec Sees More Rewards in Management DP

By Bob Johnson
CW New York Bureau

NEW YORK — Although the technical areas of DP are viewed as valuable company resources, more rewards are placed on the management side of computer operations.

That is what Geri M. Riegger, assistant vice-president of operations for Blue Cross/Blue Shield of Greater New York advised attendees to keep in mind when mapping out their career plans at a meeting of the Association of Women in Computing (AWC) held here recently.

Riegger explained that as the computer industry matures, corporations are viewing DP and the people who manage these areas with more value, offering increased responsibility and status. Professional computer people should take advantage of this situation, she said.

Dual Career Choices

In retrospect, the speaker said that in the early days of computers professional DPers thought of themselves and their career paths primarily along technical lines. Now, however, the computer work force has become aware of the management world and faces dual career path choices.

"Many corporations have developed more respect for the technical career side of things and have even developed higher levels of opportunity. But the reality is that the technical side offers less career opportunity than management because companies look at the latter as affecting the bottom line of its business," Riegger explained.

The executive maintained that working on the technical side is an excellent and usually mandatory starting place in DP and those who choose it as their career should pursue it broadly. She added, "They [technicians] should attempt to round out their work by doing things such as consulting and strategic planning. If the technical side is where you want to stay, work at learning your craft, but beware of the limitations."

Riegger also cautioned DPers about the title of technician. She said that unfortunately there is still some ambivalence about that title in some corporations today because of the past associations with "talking in acronyms." She said that DPers should work at having the term changed to "professional," a description she feels reflects a DPer's real activities.

Those DPers who aspire to more money, status and power will find management the way to go, according to Riegger. She said that technicians who are so inclined should not be afraid to venture into the managerial side of things just because they feel "comfortable" or "expert" in their current jobs. She said that career choices should not be based on fear. "Try the unknown, don't cop out," she advised.

Riegger said that the managerial side offers the best relief for frustrated DPers who have problems about constantly taking guidance and not having any say in matters. Management not only offers corporate recognition through money and status, but managerial power, which is a tool for getting things done, she stated.

Technical DPers who want to get to the management side should stress job activities such as marketing, planning and consulting, Riegger claimed. These things help technicians, who typically work alone, in dealing with people, a primary requirement for management responsibility.

Riegger explained that in management, as opposed to the technical side, most activities are done through group effort. For example, a job such as systems programmer, as it was traditionally designed, is one of the worst ways to prepare for DP management.

"This area has too narrow a focus to be valuable for management. If you're on this side and want to become a manager, try to stress the broader aspects of the job, such as user interface," she asserted.

There are several positive ways of preparing for management, Riegger noted. One excellent way is project management and development, which she said combines both technical and managerial skills. She pointed out that it involves planning, communicating, selling the concept to users and management, necessary corrective actions and the allocation of human and financial resources. Another good way is working in computer operations, which she described as a complex, challenging and bottom line-oriented environment.

Reigger said that this corporate "line" area is extremely useful for grooming managers because they are exposed to day-to-day productivity needs and are responsible for managing large hardware and people budgets.

Although management-type experience is valuable for the aspiring DP manager, Riegger said it is important that the DPer remember to keep goals in line with company goals.

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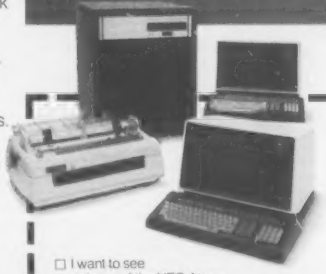

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The Benchmark in World Class Computers

Data Analysis Called Key to Info Engineering

By Bob Johnson
CW New York Bureau

NEW YORK — The decade of the '80s will require companies to manage data as a resource, and the key to this kind of information engineering is data analysis.

That is what attendees at the recent DMW Group, Inc. "World Update '83" seminar were told here by Herb Jacobsohn, vice-president of Database Design, Inc., during a presentation on "Information Engineering and the Corporate Data Resource."

Jacobsohn said that DP organizations will be facing "crucial times" within the next 10 years in an effort to get communications and data together for user needs. Proper data analysis, or as Jacobsohn defined it, "data resource management," is essential to accomplishing this task.

"In the '50s and '60s, data, or files, were managed primarily by report/retrieval systems that for the first time provided users with a way to get at files they needed. But the problems of wanting to access data from not just one, but many files arose, giving rise to 'data management.' This need, in turn, ushered in data base management systems [DBMS] in the '70s," Jacobsohn said.

Original Concept

He maintained that the original concept of DBMS, where one set of data resides separately, providing application independence and security was excellent, but that the implementation of these systems was bad. He added that what we have now is not truly integrated DBMS, which was the developer's primary goal, but files maintained by them.

"The main reason that the data base environment has not reached its intended goals is because the emphasis has always been on processing. We didn't understand data. For years all of our data base management tools were processing-oriented. For example, Isam and Vsam are concerned with the physical structure and access of data," he said.

The result is a situation that requires 80% of the DP budget to be spent on data base maintenance, yielding a shortage of good data base tools and enough people to develop them. Fourth-generation languages, information centers and the like are good tools, but unless data is properly analyzed, DPers will not get good results, Jacobsohn added.

First Step

The ability to view data as a resource, thinking of it in terms of "structure and time-element information" as opposed to raw data, is the first step in effective data analysis, Jacobsohn said. From this point, information analysis can begin.

"The most essential concept in the analysis process is formulating the corporate architecture by defining the strategic objectives of the company. Look at it as a business plan, and from this plan the information architecture, or strategic planning can be done," Jacobsohn noted.

Once the information architecture is in place, including the development of data bases and priorities, development projects can begin.

"Each development project needs data analysis and process analysis, but the data analysis is more important. This is different than what has been going on for the last 30 years, but it is the way to build subject data bases that have data in the right place, stored together and used together," Jacobsohn concluded.

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Will Examine 6,000 Pregnancies

Researchers to Probe CRT Effects on Women

By Jenny Charlesworth
CW Staff

WASHINGTON, D.C. — Researchers at the National Institute for Occupational Safety and Health (Niosh) hope to begin this year the first large-scale study on disease control, focusing directly on women who use CRT terminals, rather than on emissions from the machines themselves.

The proposed study would specifically target women instead of terminals because, "Niosh can find no scientific evidence indicating that there is a reproductive problem from the use of video terminals," according to Bill Murray, chief of the Niosh radiation section. "In this type of study, you don't need to measure radiation coming off the terminals because it doesn't pinpoint any specific agent that people would be exposed to."

Growing pressure from women office workers in the U.S. and Canada has reportedly encouraged this study. Union representatives from hospitals, manufacturing and other areas in the private sector are apparently concerned that the use of CRT terminals may contribute to spontaneous abortions and birth defects.

Examine Records

As part of the study, researchers at Niosh would examine the records of 6,000 pregnancies during the past two years among women members of a particular health maintenance organization, 30% of whom used CRT terminals, Murray said.

If the study is done, the group at Niosh, led by Dr. Michael Rosenberg, chief of reproductive health activity, will compare the rate of spontaneous abortions among CRT terminal users and nonusers as well as the rate of birth defects among children born to members of the health maintenance organization.

According to a Canadian union spokeswoman, two of six pregnancies reported among one group of office workers at the Surrey Memorial Hospital in Surrey, British Columbia, since 1978 ended in miscarriages. In the remaining cases, one child needed corrective eye surgery and had a deformed foot, another was born a month prematurely, one was born with a bronchial disorder and the fourth was normal [CW, July 19].

Other Hospitals

Employees of other Canadian hospitals who have worked with CRT-based terminals and equipment for several years experienced migraine headaches, sleeping problems, sore throats, intense light sensitivity, back and shoulder problems and, in one case, a tingling sensation and numbness in the right arm, the spokeswoman said.

"Seven to 10 million [CRT terminals] are in use today and the people at Niosh believe that 45% to 50% of the working population will work at least part-time on [CRT terminals] by the year 1990," Murray stated. "If there is a problem, someone better find out what it is."

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Problem Traced to Computer

Winners Misdealt at Tournament

DAVIS, Calif. — When computer science professor Chip Martel recently traveled all the way to Biarritz, France, to compete in a world-class bridge tournament, he probably thought he could forget about data processing for a while.

But at the World Open Pairs, the scores of 160 players (80 pairs) competing over six days were processed by a computer that was blamed for robbing Martel and his partner of first place. "We were listed in the final standings as eighth," Martel said in an interview here.

Martel and Lew Stansby had been keeping track of their scores when the winner of the tournament was announced. After pointing out the problem to the judges, the error was traced to a mix-up related to which players were sitting at which tables. As a result, some players received the scores of their competitors.

"We showed them what our scores were for the 30 games," Martel pointed out, and the pair was awarded first place. "The people running the computer program didn't know how bridge tournaments are run," he explained.

Computer scoring in bridge matches, like computer scoring in pro golf tourneys [CW Aug. 2], is becoming more common. "They've been developing computer scoring for a number of years," Martel said.

In addition to handling the scores of some 30 games per pair and posting updated standings on terminals, the computer was also responsible for dealing the cards. A random generator assigned each of the 40 concurrent games the same four hands to make for a more equal competition. "The actual physical distribution of cards was by hand," Martel said, but the computer assigned what cards were to be handed out to the competing pairs.

Martel has been playing bridge for 12 years and with his partner qualified for the World Open Pairs along with 20 other American teams. The 29-year-old University of California professor noted that "among people who play bridge, the most common profession is computer[s]," due to the type of logic required to succeed at the game.

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Photo from San Francisco Opera's production of Samson et Dalila heard nationwide on NPR stations.

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User Course On ADRSII Available

LOS ANGELES, — Crwth Computer Coursewares has announced the availability of an interactive study course, "Using ADRSII," designed to provide end users of an information center with the use and facilities of IBM's A Departmental Reporting System Version 2.

The course provides a simulation of the product and runs under the IBM Instructional Systems, the company said. End users can complete their ADRSII education in 10 to 12 hours of on-line interactive instruction, the company claimed.

"Using ADRSII" can be leased for $2,800/year, or purchased for $6,000 from Crwth Computer Coursewares, Suite 205, 12655 Washington Blvd., Los Angeles, Calif. 90066.

Calendar

Week of Jan. 30

Jan. 31-Feb 2, New Orleans — **Communication Networks 1983.** Contact: CW Communications, Inc., Conference Management Group, Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

Jan. 31-Feb. 4, Washington, D.C. — **Structured Analysis/Design Workshop.** Contact: Structured Methods, Inc., 7 W. 18th St., New York, N.Y. 10011. Also being held in New York.

Jan 31-Feb. 4, Washington, D.C. — **Programming in the C and Unix Environment.** Contact: George Washington University, School of Engineering and Applied Science, Washington, D.C. 20052.

Feb. 1-3, Columbus, Ohio — **CBE Courseware.** Contact: Nancy J. Norris, Vice-President, Public Relations Services, Durborow Associates, Columbus, Ohio 43214.

Feb. 1-3, Washington, D.C. — **Software Test and Evaluation Conference.** Contact: National Security Industrial Association, Suite 901, 1015 15th St. N.W., Washington, D.C. 20005.

Feb. 2-4, Johannesburg, South Africa — **Office Automation and Integrated Information Processing Support Systems.** Contact: Frost & Sullivan, P.O. Box 4026, Johannesburg 2000, South Africa.

Feb. 3-4, Hasbrouck Heights, N.J. — **Unix: Concepts, Functions and Applications.** Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

Feb. 4-6, Paradise Island, Bahamas — **Caribbean Computer & Electronics Expo 83.** Contact: Ormand Vee Co., Suite 155, 1430 Miner Road, Des Plaines, Ill. 60016.

Week of Feb. 6

Feb. 6-9, Orlando, Fla. — **1983 Telecommunications and Electronic Banking Workshop.** Contact: American Bankers Association, 1120 Connecticut Ave. N.W., Washington, D.C. 20036.

Feb. 7-8, Capitol Hill, Washington, D.C. — **Ku-Band Satellite Communications in the '80s.** Contact: Phillips Publishing, Inc., 7315 Wisconsin Ave., Bethesda, Md. 20814.

Feb. 7-9, Chicago — **Data Communications: An Introduction to Concepts and Systems.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Feb. 7-10, Warren, Mich. — **Project Management.** Contact: Bill Schoonmaker, Brandon Systems Institute, 4720 Montgomery Lane, Bethesda, Md. 20814.

Feb. 8-19, Toronto — **Intermediate APL.** Contact: Numetrix, 5th Floor, 3 Church St., Toronto, Ontario, Canada M5E 1M2.

Feb. 8-10, Boston — **Data Network Design: Techniques for Systems Analysis and Design.** Contact: American Management Associations, 135 W. 50th St., New York, N.Y. 10020.

Feb. 10-11, Boston — **Unix: Concepts, Functions and Applications.** Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

Feb. 10-11, Boston — **Computing Technology for Non-Computer Professionals.** Contact: Data Processing Management Association Educational Foundation, 3420 Kashiwa St., P.O. Box 3608, Torrance, Calif. 90510.

Feb. 10-11, Dallas — **Texas Telecommunications Conference.** Contact: Tommy King, Box 7, Fort Worth, Texas 76101.

Feb. 10-11, Boston — **Computing Technology.** Contact: Data Processing Management Association, Education Foundation, P.O. Box 3608, Torrance, Calif. 90510.

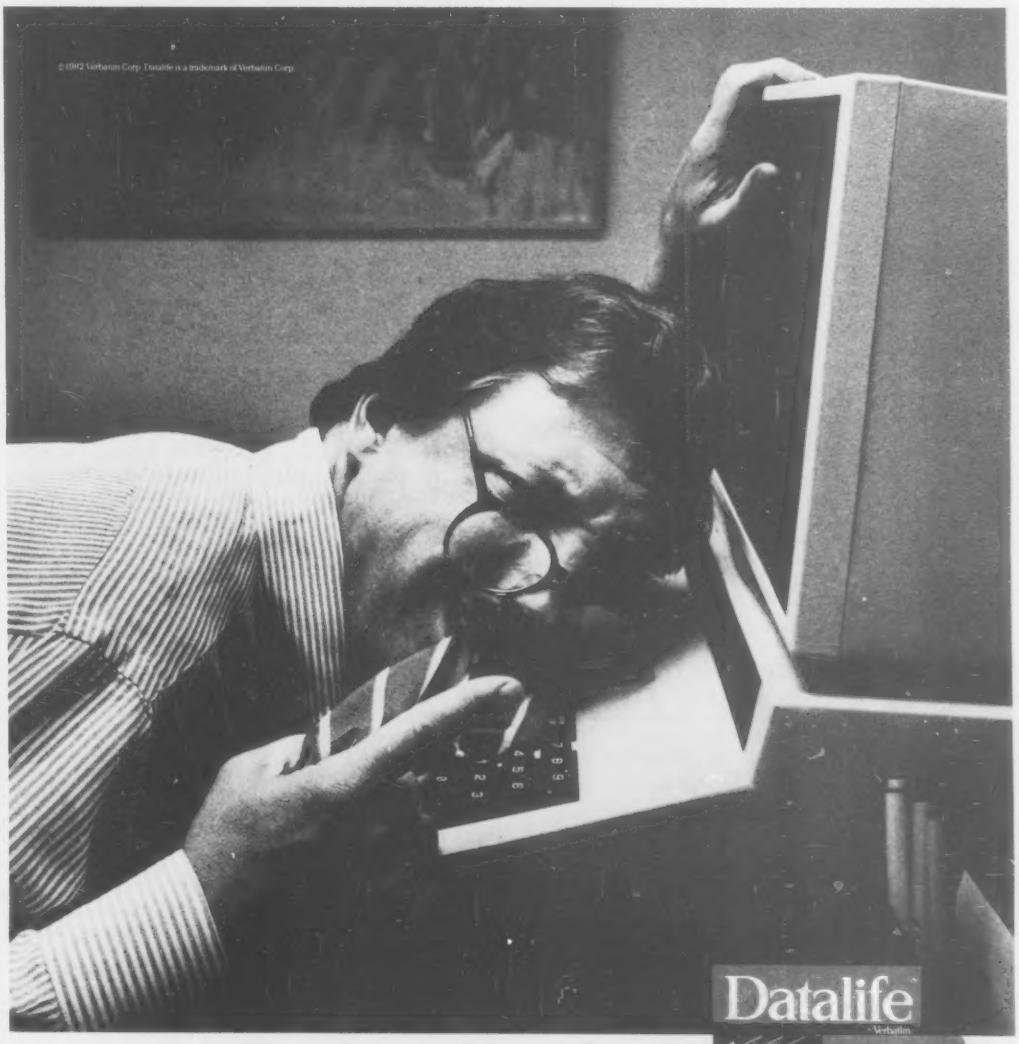
Feb. 11-12, Costa Mesa, Calif. — **Software Requirements, Analysis and Design.** Contact: Data Processing Management Association Education Foundation, Suite 1016, 5959 W. Century Blvd., Los Angeles, Calif. 90045.

Feb. 13-15, Carmel, Calif. — **Institute for Graphic Communications' Tenth Annual Analysis of New Developments and Trends.** Contact: Institute for Graphic Communications, 375 Commonwealth Ave., Boston, Mass. 02115.

The Week of Feb. 14

Feb. 14-15, Los Angeles — **Small Computer Systems in Government.** Contact: U.S. Professional Development

(Continued on Page 24)



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Calendar

(Continued from Page 23)
Institute, 12661 Davan Drive, Silver Spring, Md. 20904.

Feb. 14-16, Summit, N.J. — **Job Control Language.** Contact: Chubb Advanced Training Center, 480 Morris Ave., Summit, N.J. 07901.

Feb. 14-16, Summit, N.J. **MVS Dump Debugging.** Contact: Chubb Advanced Training Center, 480 Morris Ave., Summit, N.J. 07901.

Feb. 14-16, Los Angeles — **Third Annual Conference and Symposium on Computer Security and Disaster Recovery Planning.** Contact: Nancy DeMatteo, Registrar, HSH National Management, Inc., Suite 215, 150 Wilson Bridge, Worthington, Ohio 43085.

Feb. 14-16, Washington, D.C. — **Selecting Small Computers for Government and Business.** Contact: Continuing Engineering Education, George Washington University, Washington, D.C. 20052.

Feb. 14-16, Washington, D.C. — **Data Communications: An Introduction to Concepts and Systems.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Feb. 14-16, New York — **Telecommunications Management: Cost Reduction Techniques.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Feb. 14-18, Washington, D.C. — **Structured Design & Programming Workshop.** Contact: Bill Schoonmaker, Brandon Systems Institute, 4720 Montgomery Lane, Bethesda, Md. 20814.

Feb. 15-16, San Francisco — **Voice Processing: The Voice Store and Forward Arena.** Contact: Probe Research, Inc., P.O. Box 590, Morristown, N.J. 07960.

Feb. 15-17, Orlando, Fla. — **1983 ACM Eleventh Annual Computer Science Conference.** Contact: Association for Computing Machinery, 11 W. 42nd St., New York, N.Y. 10036.

Feb. 16-17, San Francisco — **Unix: Concepts, Functions, Applications.** Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

Feb. 16-18, New York — **The 1983 SIA Microcomputer Conference & Exhibit.** Contact: Securities Industry Association, 120 Broadway, New York, N.Y. 10271.

Feb. 17-18, San Francisco — **Data Communications: Advanced Concepts and Network Management.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Feb. 18-19, Washington, D.C. — **Advanced Program Control Techniques.** Contact: The Technical Marketing Society of America, P.O. Box 91295, 5959 W. Century Blvd., Los Angeles, Calif. 90009.

Feb. 18-19, San Francisco — **Developing and Implementing Purchase Order Management Systems.** Contact: Sylvia Vogelman, Seminar Manager, Center for Retailing Management, 425 Park Ave., New York, N.Y. 10022.

Feb. 18-21, San Diego — **Second Annual Pacific Computer Expo.** Contact: Pacific Computer Expo, P.O. Box 963, Scottsdale, Ariz. 85252.

Week of Feb. 20

Feb. 20-22, Winter Park, Fla. — **Outlook for Optical & Video Disk Systems and Application.** Contact: Institute for Graphic Communications, 375 Commonwealth Ave., Boston, Mass. 02115.

Feb. 21-23, Philadelphia — **The 1983 Office Automation Conference.** Contact: American Federation of Information Processing Societies, Inc., 1815 N. Lynn St., Arlington, Va. 22209.

Feb. 21-24, St. Paul, Minn. — **Project Management.** Contact: Bill Schoonmaker, Brandon Systems Institute, 4720 Montgomery Lane, Bethesda, Md. 20814.

Feb. 21-25, Irvine, Calif. — **The 1983 Alpha Micro Users Society (Amus) Convention.** Contact: Amus, Suite 210, 1911 11th St., Boulder, Colo. 80302.

Feb. 22-23, Minneapolis — **The Eleventh Annual Midwest Equipment Exhibit & Seminar.** Contact: John Bastys, Countryman Associates Co., 1821 University Ave., St. Paul, Minn. 55104.

Feb. 22-24, Cincinnati — **Fundamentals of Management for Quality Control Supervisors.** Contact: American Management Associations, 135 W. 50th St., New York, N.Y. 10020.

Feb. 22-24, Washington, D.C. — **Federal DP Expo.** Contact: The Interface Group, 160 Speen St., P.O. Box 927, Framingham, Mass. 01701.

Feb. 22-24, Washington, D.C. — **Computer Performance Evaluation.** Contact: The George Washington University School of Engineering and Applied Science, Washington, D.C. 20052.

Feb. 22-26, San Francisco — **MVS-SP Internal Logic, Systems Design and Performance.** Contact: Computer Systems Research, Inc., 195 W. Mail St., P.O. Box 45, Avon, Conn. 06001.

Feb. 22-23, Los Angeles — **Software Requirements Analysis.** Contact: Education Foundation of Data Processing Management Association, P.O. Box 91295, 5959 W. Century Blvd., Los Angeles, Calif. 90009.

Feb. 23-25, Washington, D.C. — **Local Communication Networks and Digital Private Branch Exchanges.** Contact: George Washington University School of Engineering and Applied Science, Washington, D.C. 20052.

Feb. 23-25, Los Angeles — **Practical CAD/CAM Considerations.** Contact: University of California, Los Angeles, Continuing Education in Engineering and Mathematics, 6266 Boelter Hall, Los Angeles, Calif. 90024.

Feb. 23-25, Denver — **Computer Micrographics Technology's (Comtec) 12th Annual Conference.** Contact: Comtec, Suite 200, 100 N. Winchester Blvd., San Jose, Calif. 95128.

Feb. 24, Wellesley, Mass. — **Multivendor Data Communications Networks.** Contact: Q.E.D. Information Sciences, Inc., P.O. Box 181, 180 Linden St., Wellesley, Mass. 02181.

Feb. 24-25, Washington, D.C. — **IBM's Systems Network Architecture: A Master Plan for Teleprocessing.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Feb. 24-25, Chicago — **Unix: Concepts, Functions, Applications.** Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07094.

Feb. 24-25, San Diego — **Computers in Construction.** Contact: CIP Information Services, 11-5-F Spring St., Silver Spring, Md. 20910.

Feb. 24-26, Los Angeles — **Word Processing Supervision Workshop.** Contact: National Institute for Management Research, P.O Box 3727, Santa Monica, Calif. 90403.

Feb 24-26, Short Hills, N.J. — **OS/VS Job Control Language.** Contact: Advanced Training Center, Division of Chubb Institute, 480 Morris Ave., Summit, N.J. 07901.

Week of Feb. 27

Feb. 28-Mar. 2, Houston — **EDP Disaster Recovery Seminar.** Contact: EDP Security, 181 West St., Waltham, Mass. 02154.

Feb. 28-Mar. 3, New York — **An Intensive Seminar in Computer Contracts.** Contact: Brandon Consulting Group, Inc., 17715 Broadway, N.Y. 10019.

Feb. 28-Mar. 4, Washington, D.C. — **Computer Communication Systems and Networks.** Contact: George Washington University School of Engineering and Applied Science, Washington, D.C. 20052.

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APR.	20-22	DALLAS
APR.	25-27	SAN FRANCISCO
MAY	9-11	NEW YORK
MAY	9-11	WASHINGTON
MAY	16-18	DENVER
MAY	25-27	LOS ANGELES

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APR.	18-19	LOS ANGELES
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MAY	5-6	WASHINGTON

IBM's Systems Network Architecture: A Master Plan for Teleprocessing

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MAY	23-25	CHICAGO

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FEB.	23-25	NEW YORK
MAR.	21-23	SAN FRANCISCO
APR.	25-27	CHICAGO
MAY	4-6	WASHINGTON

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MAR.	21-23	WASHINGTON
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APR.	6-8	NEW YORK

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FEB.	14-16	SAN FRANCISCO
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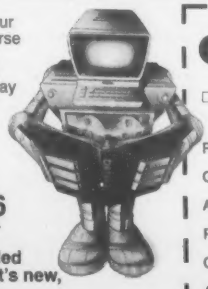

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EDITORIAL

Time for a Change

No publication can stand still and expect to remain vital to its readership. *Computerworld* is no exception. We have never been reluctant to modify our editorial coverage as the dynamics of the computer industry demand.

For example, we have in the past year come to grips with the microcomputer explosion, as many of our readers have. While hardware and software announcements are important and ones that readers should be kept informed of, we believe that the integration of microcomputers into large computing environments is the key management issue for our readers. Our editorial coverage of all aspects of the micro explosion increased accordingly last year, reflecting the realities of the marketplace.

Nor have we been reluctant to categorize news into clearly defined sections of the publication, believing that such categorization makes for quicker and easier reading. Hence, CW is formatted around a news section, technical sections, In Depth, Op-Ed and so on.

But when the lines of computing power between micros, minis and mainframes are blurring rapidly, we believe it makes sense to reflect that change editorially. Thus, with this issue we have merged the Miniworld and Systems and Peripherals sections of *Computerworld* and, we hope, eliminated an artificial editorial distinction between machines that no longer exists in the working world of computers.

Beginning with this issue, almost all hardware information, from micros to mainframes, can be found in one section — Systems and Peripherals. Almost all software information, including microcomputer software, can be found in the Software and Services section. As in the past, major hardware and software announcements that, in the opinion of the editors, are of most interest to medium- and large-scale users will continue to appear in the front news section of *Computerworld*.

Does the elimination of the Miniworld section also mean we are predicting the death of the minicomputer? Not at all. Like our minicomputer section, which served us well when the lines of demarcation between machines were more distinct, minicomputers have served and will continue to serve a large portion of the computing world admirably. And minicomputers will continue to receive the same kind of editorial attention as in the past. And *Computerworld* will continue to evolve as it has over the past 15 years.

DATA PAST

Five Years Ago
Jan. 9, 1978

WASHINGTON, D.C. — Six senators wrote to the Office of Management and Budget and protested Internal Revenue Service efforts to include a controversial computer system for tax administration in the 1979 budget request that former President Carter was to send to Congress.

— — —

NEW YORK — IBM filed a motion for mistrial in the U.S. vs. IBM antitrust case on the grounds that, nine years after this action was started, the government was "dramatically changing its market definition claim virtually at the end of its direct case."

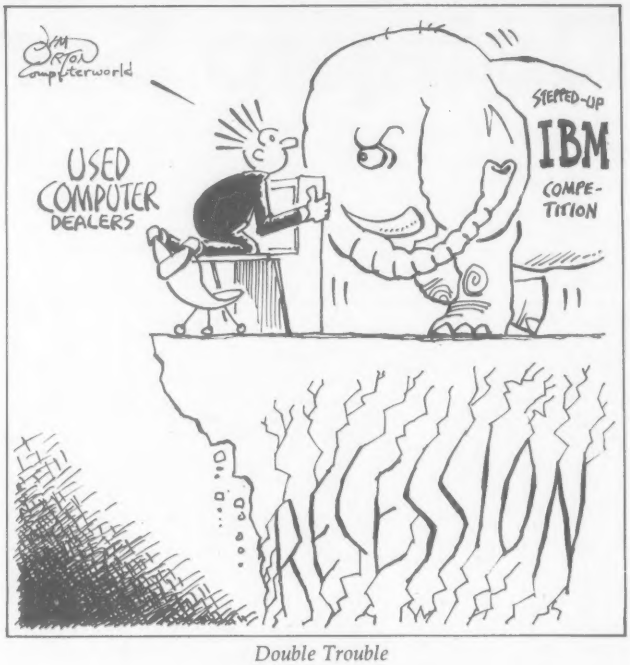
Ten Years Ago
Jan. 10, 1973

NEWTOWN, Pa. — Computer Hardware Consultants & Services, Inc. announced a hardware enhancement for IBM 360/30 users to make their systems operate at speeds comparable to the Model 40.

The 360/30 Accelerator feature was said to double the memory "fetch" rate of the mainframe and to increase throughput.

— — —

WARWICK, R.I. — IBM was using "the resources available to the bureaucratic structure of a large corporation" in an attempt to dissuade a user from moving to another vendor, according to this city's DP director.



Double Trouble

LETTERS

Games People Play

Cultural influences such as family expectations and historical role-playing may have a detrimental effect on young girls considering DP as a career, as the article "Does Space Invaders Savvy Predict DP Success?" [CW, Dec. 13] implies.

It is, however, ludicrous to propose that computer arcade game agility is significantly related to computer programming competence any more than skills in bowling or billiards might be.

Hand-eye coordination, manual dexterity and quick response to attacking spaceships may all be slightly better developed in the arcade. But it is unlikely that the gamesmanship will lead to anything directly related to DP other than a positive attitude toward computers and the (entertainment) uses to which they may be put.

Robert Gordon
Software Product Specialist
TSI International
Norwalk, Conn.

Talk to the Victims

The two articles "DP Managers Deny Ageism" and "Execs Praise Older Workers, But Slow to Hire" [CW, Dec. 6] could leave many readers with the impression that the problem is minor, bordering on nonexistent.

I can assure you from firsthand experience that it is not. Even in today's economic climate, someone with solid, broad experience in data processing would not find it necessary to undergo the hell I did at age 51. No one under the age of 40 would be subjected to it — why should someone over 40 be?

I did not start generating interviews until I had prepared a resume from which it was impossible to tell my age. I have encountered age bias in many forms, in many places. It is alive and well and living all across the land. Why do you think an organization like Forty Plus exists?

The people quoted in one of the articles probably think they are not biased, but their quotes suggest otherwise.

Concerning applicants over 40, John Hoskin said, "[I] do not know how they would react to being supervised by a person younger than themselves." I don't want to shock anyone, but supervisors younger than some of their subordinates is commonplace. My supervisor is at least 12 years younger than I. So what? I respect competence. The concern is both irrelevant and biased.

A DP director went on to say, "I would not hire an older person if [he was] overqualified for job." "Overqualified" is equivalent to "too much experience," which is equivalent to "too many years." Blatant prejudice such as this has to stop — it is wasteful, as well as illegal. Surely, at least waste must be a concept understood and abhorred by most rational managers.

You could perform a great service for all your readers by having more articles about the serious problem of age discrimination and making them more realistic. Talk to the victims next time, not the perpetrators.

Louis Paulson
Vienna, Va.

Computerworld welcomes comments from its readers. Preference will be given to typed, double-spaced letters of 150 words or less. Letters may be edited for purposes of brevity and clarity. Letters should be addressed to Editor, *Computerworld*, 375 Cochituate Road, P.O. Box 880, Framingham, Mass. 01701.

LECHT ON SCIENCE / Charles P. Lecht

Ringing in New Views of DP Systems in '83

Computerworld this week begins a new column, "Lecht on Science." Written by Charles P. Lecht, the column will explore wide-ranging issues in computer news and technology and will appear in these pages twice a month.

If you thought change in computer systems technology was accelerating in 1982, you haven't seen anything yet. By this time next year — January 1984 — 1982 will be remembered as a period of relative calm in comparison with what we are to witness in 1983.

So intense will such change be that we will be compelled to alter our most fundamental views of the nature of computer systems and their roles in our lives. New and improved methods of acquiring the powers engendered by computer technology are emerging swiftly and these powers, reapplied to this same technology, are fueling its capacity for change in ever more efficient ways. However unsettling this may be to computer systems users, the net effect of 1983's change should be dramatically positive.

For all the ferocity of its drama, we still have the delicious luxury of exploring this phenomenon and speculating on its meaning in a relatively tranquil state of mind.

Extraordinary Powers

While it has been true all along, we've only recently accepted the fact that computer systems impart to their users extraordinary powers in memory, logic and computation unavailable in our natural world. And sewn together like beads into strands and strands into lattices, computer systems have evolved to become at once their own repository of such powers, a part of yet another's and a portal to still others of lesser or greater consequence.

This came about as a result of the synthesis of computer and communications systems technologies in the 1970s. It is as though the once clear ideas that made a computer system so readily distinguishable from a communications system have been swept away in a tidal wave of change. All the substantial attributes of either are found in the other: miles of circuitry, switches, terminals, signal processors, buffers, memories, conversion devices, software and even wave transmitters/receivers.

This has caused us to redefine our concept of a computer system to mean a network of devices whose communications veins and arteries may vanish into the microscopic world and extend into the macroscopic world. Since all modern systems are collections of processors, some of which may be located remotely, ad hoc runtime system configurations are possible. We send data between devices to be processed and receive the results through massive lattices of wire whose organizational complexities are mind-boggling and whose cross-sectional dimensions vary from micron to meter.

This has led, not unreasonably, to a blurring of our perceptions of a specific computer system and its limits, especially with regard to conventional concepts of temporal and spatial dependencies.

As if this were not enough to handle, contemporary systems linking widely dispersed locations are involving an increasing broadcast component. Thus, our very concept of systems, hard enough to "domesticate" on terra firma, now extends into a new, heretofore alien, dimension, complete with its own set of barely compassable peculiarities.

With its use no longer restricted to mere shipment of data, broadcast is becoming practical as a storage medium for massive files humming soundlessly somewhere between the moon and New York City.

The Titans

Under development in the past few years have been massive computer systems referred to in Bell Laboratories literature as Integrated Services Digital Networks (ISDN). The appearance of these titans underscores our commitment to create ever larger repositories of computer systems power and to distribute this power in ever more effective ways.

I visualize such systems in the form of massive ships suspended in artificial intelligence space. Possessed of their own intelligence and augmented by exogeneous intelligences docked at their ports, they, and the promise of the ISDN technology from which they spring, present a spectacle (and capability) of breathtaking beauty and scale.

As such systems are created in the macroscopic world, so identical systems are aborning in the microscopic world of chips, wherein magnetic field fluctuations invoke device operations and carry messages.

In this world, too, are satellites, transmitters and receivers. The satellite is suspended in a space whose "ether" is silicone, sapphire, metal oxide and exotic otherworld compositions. However flat the world of the silicon chip may seem to the naked eye, some of its elements are separated by distances proportional, within their physical frame of reference, to those separating us from our own space satellites.

Peering through a microscope, we are astounded to see a network of cables and devices more complex than their nearest counterparts in, say, some vast, sprawling, tentacular chemical plant. Not only are we surprised that a third dimension appears, but that the distances traversed laterally on some chips, however confining their edge sizes may seem to us to be, rival those in whose terms we conduct our lives

(Continued on Page 30)

HUMAN CONNECTION / Jack Stone‡

Salary Differential Can Produce DP Misfits

My article "No Place for Peter Principle on Ladder of Success" [CW, Nov. 15] about DP misfits gave William A. Delaney, president of Analysis and Computer Systems, Inc., a Bedford, Mass., software firm, encouragement to send this letter:

"The age-old argument over the generalist vs. the specialist in management rages on unanswered because there is no absolute answer. It all depends upon the individual who must realize what he wants, can or cannot do and has the foresight, integrity and honesty to admit it.

"Since most DPers know that to turn down an opportunity for a promotion probably kills chances for further advancement, few do. They give it a shot, and sooner or later, most become victims of the 'Peter Principle,' according to which individuals are promoted to the levels of their incompetence. Some have realistic and achievable goals for themselves and their careers. But many do not; they have dreams beyond their grasps. As our parish priest often tells us, we are all too kind and forgiving about our own faults and limitations, but not too kind in noting them in others.

"It is the job of middle and higher management within any organization to spot those capable of further advancement, tell them so, watch the reaction and groom those that respond appropriately for larger responsibilities. None of us likes to judge others, especially in a way that holds them from climbing the career ladder, but the fact is that not everyone can go up. Nor can anyone climb endlessly. All are not suited for broader tasks, and there never are enough vacancies at the higher levels anyway.

"So judge we must, and we try to be fair and honest in our deliberations, remembering we are dealing with people whose careers are in our hands. Promoting someone who you know won't work out at a higher level is not the kindest thing to do. Some managers rationalize such a decision by knowing that if the employee fails, it's the employee's fault, not the manager's."

Hold Manager Responsible

"But that's not the way I look at it. I believe that when a manager allows someone to advance to a higher level — a person who the manager honestly believes is not suited by temperament, experience or some other factors for the higher position — and if failure follows, I hold the manager responsible for the situation.

"The software business, in which the tendency is to promote the best programmer into a management position, is particularly vulnerable in this regard. In many cases, the firm loses its best programmer and gains its worst manager.

"Any manager who has had to intervene and remove, demote or transfer a victim of the Peter Principle well knows how difficult it is for everybody concerned. That is why, in many cases, such people are allowed to remain in positions that are one level above their levels of competence."

Poor Performance

"It's painful to watch individuals in such situations; everyone tries to work around them. In many cases, they perform very poorly — far worse than not knowing answers, they don't know the questions or even what the job entails. And when a manager knows the victims well, the situation becomes very sticky.

"Using a football analogy, the best way to stop a pass is to anticipate it and 'sack' the quarterback before he throws the ball. But if the quarterback dodges the blitz and tosses the ball into the air, it's up for grabs and anything can happen.

"When a manager promotes someone who is not qualified for a higher position, the ball is in the air."

Major Problem

"Company policies that provide higher salaries to managers than those paid to 'technical only' people is the major problem. The common practice is that a manager must receive a higher salary than anyone in his group, which attracts many unsuited for management into it. These people obviously want to increase their incomes and advance in the organization.

"We try not to do that in our firm. Many of our senior technical staff earn higher salaries and work for younger people who are their managers. The fact is that most managers like to deal with people, budgets, clients, schedules and the like, whereas most technical people like to work alone with the computer and do their own things in their own ways.

"Parallel, equal pay scales for both types, with compensation based on individual talents and contributions to the organization — not the title or management position — should be the dominating factor in determining raises and bonuses."

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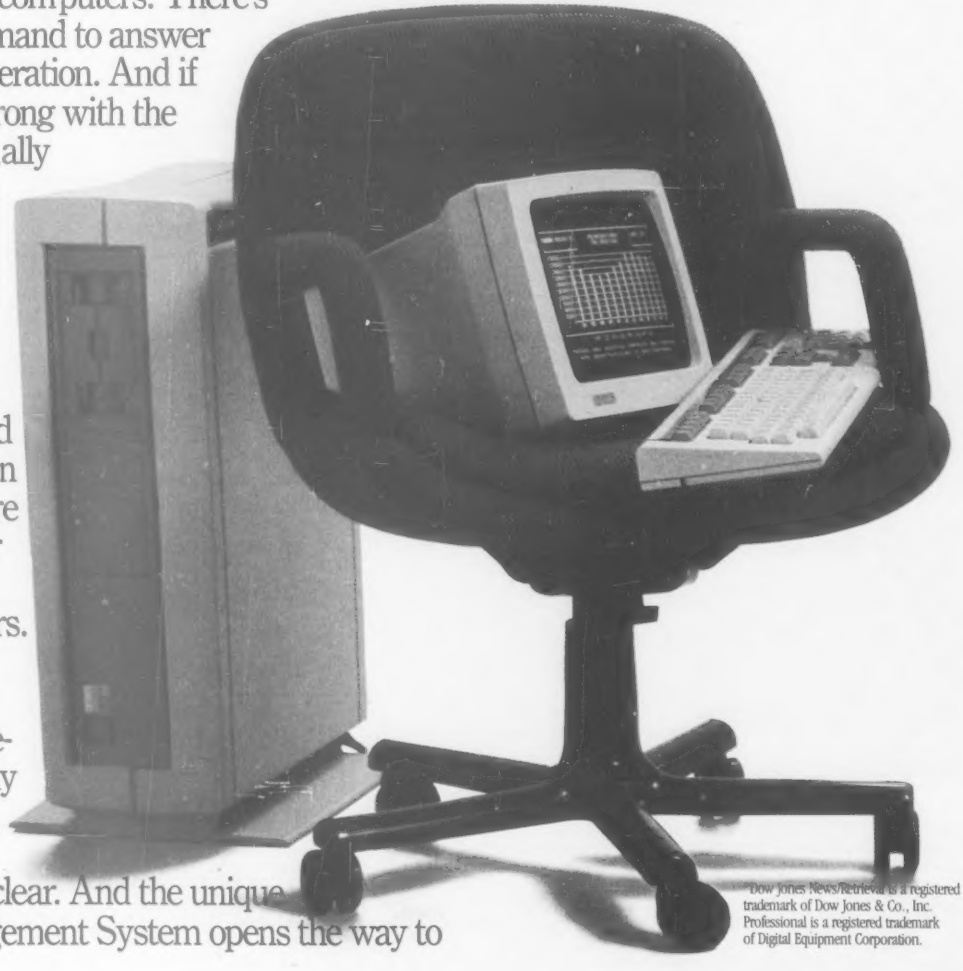

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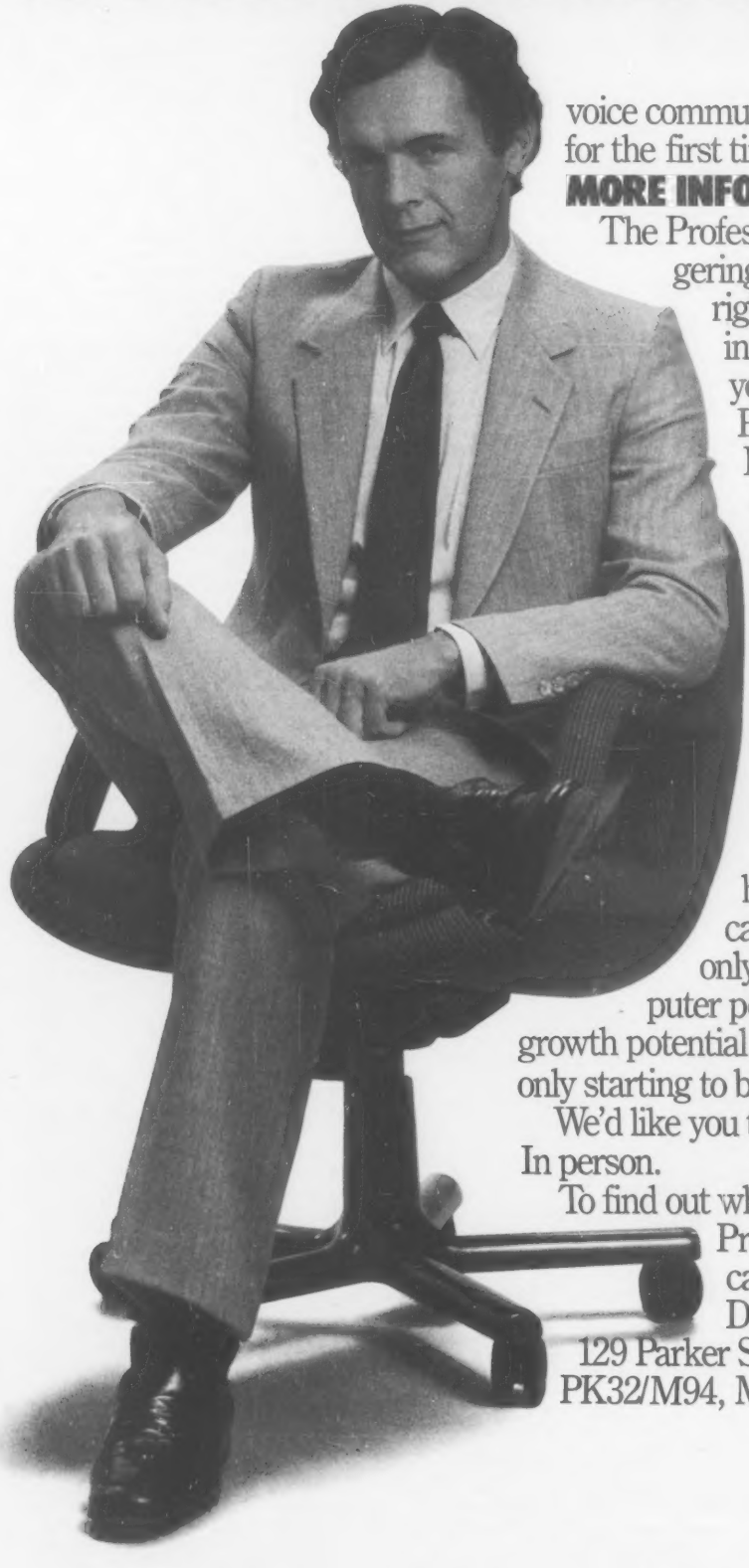

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LETTERS

What Makes a Test Valid

The various views presented on the topic of preemployment tests for programmers in "Programmer Aptitude Tests Worth the Risk" [CW, Nov. 29] were very interesting. There were, however, some statements made that should not go unchallenged.

According to Bradley W. Nelson, during the validation procedure, "Selection is based on a combination of [an applicant's] background, the interview and the test results."

During the validation process, the test is to be administered and filed — not used in the selection process. Use of the test results would reduce the variance of sample test scores and performance scores significantly and be equivalent to throwing out data.

Further, Nelson states that this process will automatically produce a high correlation between test score and performance.

Exactly the opposite is true. Neither the predictor nor the criterion will exhibit much variance. As a consequence, the correlation coefficient will be extremely low.

Nelson's parting thought that "If you developed your own test, you would have nothing to stand on" is patently absurd.

What will determine whether the test being used by a firm is valid is not whether it was "validated" by some test developer in another firm or group of firms. What makes a test valid for a firm is if there is a statistically significant correlation coefficient between scores made by applicants at *this* firm and job performance at *this* firm — nothing else is relevant.

Earl Chrysler

Federal Way, Wash.

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New Year Will See New Views

(Continued from Page 27)

in the macroscopic world.

The rate of announcement of technological breakthroughs by the world scientific community and the meaningfulness of each such announcement has been nothing short of astounding in the past few years.

It has been responsible for the current widespread proliferation of personal computers. But more important still, communications improvements have virtually eliminated the practitioner's need to visit a computer, personal or otherwise, to share in its powers: Access to them is obtainable virtually everywhere. The once discrete concepts of personal computer and terminal are in the process of synthesizing.

This phenomenon, along with communications improvements, provides us with fantastic processing potential requiring very little front-end investment. As every such device fulfills the role of being a functional locus in a strand of companion devices, unified by local-area network technology, its usage provides us with the capacity to ignite the strand, energize the lattice of which it is a part and, if only for an instant, invoke the power of a congress of Cray Research, Inc. Crays, Control Data Corp. Cybers, IBM 3084s and others.

The output of this event could vary from the manipulation of a 1G-byte data base to forecasting weather to a few microcoded real-time computer instructions fed like pablum to a baby micro guidance processor embedded in the belly of a bomb. Electronic mail dispatched by Jupiter and carried by Mercury himself could do no more.

This is all happening in 1983. Happy New Year!

Charles P. Lecht is president of Lecht Sciences, Inc., a New York-based think tank specializing in computer and communications technologies.

Chemical Firm Utilizes Package

Preconversion Planning Struts Its Stuff

DES MOINES, Iowa — Preconversion planning and the acquisition of packaged software to help carry some of the load helped a chemical firm here to complete an IBM DOS to OS conversion early — and for $85,000 less than other proposed conversion methods.

In October 1980, the Chemicals and Coatings Group of Wheelabrator-Frye, Inc. here embarked on a long-range systems plan to assess DP systems for current and future needs. One result of the study was the decision to combine current in-house DOS/VSE systems with Remote Job Entry applications running on a service bureau, under an in-house MVS system. The company decided to trade in its IBM 370/148 for an IBM 4341 Model 1 running MVS and upgrade to a Model II within four months.

The Chemicals and Coatings Group of Wheelabrator-Frye is a group of companies that manufactures products for the printing industry. In 1981 the net revenues for the firm were $280.8 million.

One year after the long-range planning began, project manager Rick Day presented detailed costs for four conversion methods to a DP steering committee. (See Figure 1). Costs were similar for three of the alternatives, but dramatically different for the fourth. "The first idea was to go for a straight DOS/MVS conversion and keep the 148 until the conversion was complete," he explained. The machine was leased through April 1982, so this first alternative meant conversion within five months or an extension of the lease.

Alternative No. 2 called for a straight DOS/MVS conversion by running VM until completion of the conversion. Since VM could not be run on a 4341, this method meant bringing in the

(Continued on Page 34)

Option One	
Three month extension of 370 hardware and software	$ 57,200
Programmer/analyst costs	$ 86,000
Purchase of IBM Assembler converter	$ 6,000
	$149,200
Option Two	
Installation of 4341 Group II two months early	$ 15,700
Additional disk and software costs during 6 month conversion	$ 27,200
Programmer/analyst costs	$ 96,600
One-time VM software purchase and education costs	$ 10,400
	$149,900
Option Three	
Installation of 4341 Group II two months early	$ 15,700
Costs of disk, software during two years until replacement	$108,800
Additional systems programmer for two years	$ 60,000
One-time VM software purchase and education costs	$ 4,400
	$188,900
Option Four	
One-time software cost for UCC-2 and UCC-20	$ 47,200
Programmer/analyst costs	$ 17,200
	$ 64,400

Figure 1

AIC's 'Intellect' Query System Enhanced With Release 201

WALTHAM, Mass. — Artificial Intelligence Corp. (AIC) has unveiled Release 201 of its Intellect query system. Among its enhancements are a graphics display option, improved query handling, an updated lexicon utility and interfaces to IBM's Sequential Query Language/Data System.

The graphics display option links Intellect to IBM's Presentation Graphics Facility (PGF) and enables users to convert automatically Intellect's output to presentation quality graphs, the vendor explained. The five formats that are selectable by the user are pie charts, bar charts, histograms, line graphs and surface charts. Users do not require knowledge of PGF, although more experienced personnel can access the menu screens of this package to exercise additional control over the graphics process.

Intellect now handles incomplete queries by attempting to derive the missing information from questions asked previously, even if no explicit pronoun reference is used. This is designed to determine whether the user is trying to narrow down a search or is simply substituting one search criteria for another. For example, if a user types in the query, "How many administrators do we employ?" and gets an answer, he may then type in, "Under $15K salary?" and will receive this further information about the group described in the first query. Under Series 100 Intellect, this assumption was made only when the subsequent query included an explicit pronoun reference, the vendor noted.

A View command has also been added to enable users, at any point in an Intellect session, to define a data base subset that the software is to use for all succeeding queries. For example, if the user types in "View is all married New executives," all subsequent data retrieval will be limited to those records related to "married

(Continued on Page 32)

VM, MVS Users Get Focus Update

NEW YORK — Information Builders, Inc. has announced Release 4.0 of its Focus data base management system for users of IBM VM/CMS and MVS operating systems.

The release reportedly offers modify/simultaneous update, a new data base component that provides for simultaneous updating of Focus data bases by multiple concurrent users.

Focus transaction processing procedures are specified with English statements that control screen management, data validation and add/delete/change logic, a spokesman said. When operating in simultaneous mode, the procedure includes additional statements that follow a change/verify protocol.

The new release also includes a data ranking facility that ranks data and selects the highest and lowest "n" records; an interface for processing Qsam, Vsam and Isam files; an expanded Help facility; data base buffers that are page boundary aligned; and a new record search strategy.

Modify/SU costs $8,500 separately, with Focus priced from $66,000 to $110,000 from 1250 Broadway, New York, N.Y. 10001.

'QCM,' 'SAS' Joined In MVS Monitor

PITTSBURGH, Pa. — Duquesne Systems, Inc. has released a product for IBM MVS systems that combines its Quantitative Computer Management performance monitor and SAS Institute, Inc.'s Statistical Analysis System (SAS) for a single source of performance and job measurement data.

The QCM/SAS data base and performance monitor also is intended to support the integration of IBM's Resource Management Facility, IMS, CICS, VM and System Management Facility performance data into one system.

QCM/SAS data base and performance monitor gives the user access to the SAS reporting library, standard reports supplied by Duquesne Systems and a supplemental report library, a spokeswoman said. The data base incorporates hierarchical organization, shared system data and shift reporting capabilities. The system maintains data libraries without storing rarely used information or making computations not requested by the user, she said.

The data base is priced separately and includes SAS from SAS Institute and QCM from Duquesne. The latter reportedly includes event-driven I/O measurements, capacity planning statistics and the ability to perform data set placement with QCM's cylinder mapping facility.

The QCM/SAS data base and performance monitor costs $20,000. The data base can be bought separately for $6,000, but the performance monitor is required for use, the spokeswoman said from 2 Allegheny Center, Pittsburgh, Pa. 15212.

Cyber 170 Users Get Package

MINNEAPOLIS — An application management facility for developing report-based applications has been announced by Control Data Corp. for its Cyber 170 computers.

The Information Processing Family provides the ability to produce reports with a reduced number of commands, browse through data files and answer ad hoc requests and process a data base from different views, a spokesman said.

Prices range from $26,000 to $86,000, with monthly leasing priced from $900 to $2,400 from Computer Systems Marketing, Control Data Corp., P.O. Box O, Minneapolis, Minn. 55440.

'Mapics' Users Get Three Modules

ATLANTA — GMD Systems International, Inc. has released three enhancement packages for users of IBM's Manufacturing, Accounting and Production Information Control System (Mapics) Distributed Financial Accounting System on the System/34 and System/38.

Transaction Histories provides audit, control, discrepancy checking and analysis for separate modules including accounts payable, accounts receivable and inventory management. Each module costs $600 for the System/34 and $650 for the System/38.

Cumulative Lead Time Calculator provides Mapics users with measurement of product lead times for production planning, a spokesman said. It costs $700 for System/34 only.

Item Master/Item Balance Synchronization allows checking for consistent duplicate data and creation of item balance records, the spokesman said. It costs $700 for System/34 only.

At the same time, the company announced Mapics/34 Operations Systems Training, a service consisting of structured sessions using company data, workbook and on-site presentation. The course uses a software facility that extracts exercise data from the live data base, the spokesman said.

The training course costs $800/day, including one-time use of the software facility. The software facility costs $1,100 for a permanent license from GMD at Suite 140, 6195 Barfield Road, Atlanta, Ga. 30328.

Plus Two Languages

DBMS Debuts for C Series

CAMBRIDGE, Mass. — BBN Computer Corp. has announced two business programming languages and a data base management system (DBMS) for its Bell Laboratories' Unix-based C series of minicomputers.

Cdibol is said to be a fully compatible Unix implementation of Digital Equipment Corp.'s CTS-500 Dibol. It allows programs writen in Dibol to run without change or modification on a C machine, the vendor claimed.

A version of Microfocus, Inc.'s Level II Cobol reportedly enables the company's C machines to compile and execute programs written in Ansi '74 Cobol. The package can offload batch-oriented applications from a mainframe system and exploit time-sharing capabilities of Unix and C series systems, the vendor said.

The Informix relational DBMS system is a collection of programs used for building data base applications. The package reportedly features interactive query language report writer software.

Cdibol is priced at $3,000. The business software package, which includes Level II Cobol and Informix, costs $7,500 from BBN at 33 Moulton St., Cambridge, Mass. 02238.

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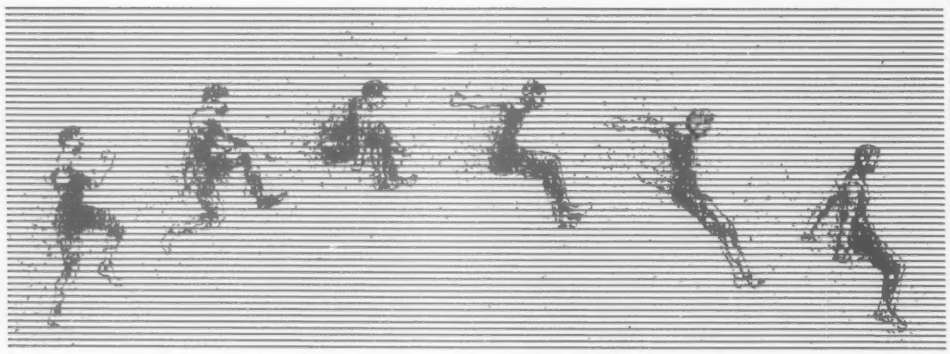

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'Intellect' Gets Release 201

(Continued from Page 31)

New England executives."

The lexicon utility has been rewritten to facilitate the building of large and complex lexicons and to provide a base for future enhancements, the vendor explained. Changes from the Series 100 lexicon include segmentation of the object lexicon to reduce the amount of virtual memory occupied. With Series 200 Intellect, only a portion of the lexicon is in memory at one time.

The two new interfaces available with Intellect Release 201 are SQL/DOS/ICCF (Interactive Computing Control Facility) and SQL/DOS/CICS.

Intellect 201 runs on IBM and plug-compatible mainframes. The $69,500 price includes a teleprocessing monitor interface and an interface to Software AG's Adabas, IBM's Vsam and AIC's own Derived File Access Method data base management systems.

The enhancements to Intellect will be available beginning in May 1983, and all of them should be released by the end of the year. Intellect 100 users under the maintenance contract will receive the enhancements free. AIC is based at 200 Fifth Ave., Waltham, Mass. 02254.

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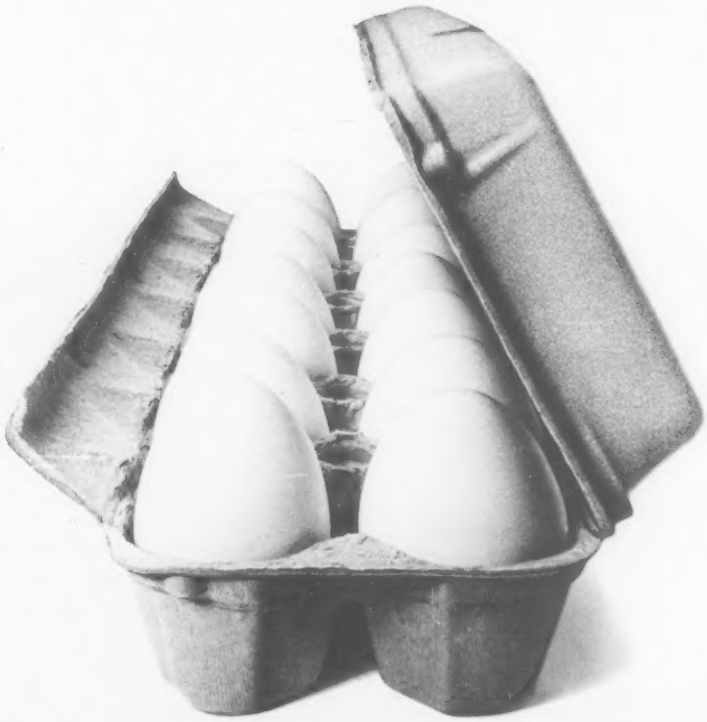

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Preconversion Planning Struts Its Stuff

(Continued from Page 31)

4341 Group II right away.

A third option was to utilize the VM environment until current DOS systems could gradually be replaced by new systems development. This plan also called for installation of the 4341 two months earlier.

The fourth alternative was to utilize UCC-2, a DOS to OS conversion software system from University Computing Co. of Dallas until current DOS systems could be replaced.

Day and his team projected time and expense levels for each step within each conversion plan. Advantages and disadvantages were determined by studying IBM manuals, speaking with DP professionals who had recently completed similar conversions and contacting UCC-2 users. Day created a cost-analysis summary to show a breakdown of the four alternative methods.

By the time Day began DOS to OS conversion plans, MVS experienced programmers were working to convert MVS service bureau programs. Day explained, "We could have hired outside programming help to do the second conversion, but that would have been expensive. So within a month we recommended the purchase of UCC-2 and also UCC-20, an OS JCL generator." His feeling was that UCC-20 could provide a head start by allowing DOS programmers to generate JCL immediately instead of waiting two months for the programmers with MVS experience to be free. "In the final analysis, that two-month head start was an important consideration," he said.

Day had six additional reasons for his conversion plan recommendation.

"When we began the first conversion from the service bureau, we noticed a division taking place among our four systems analysts and six programmers," Day said. "They almost seemed to take sides according to those who were DOS only and those who had some MVS experience. Given the small size of our staff, we didn't like this atmosphere. We felt that by giving all programmers the ability to work under MVS, we not only would avoid a feeling of staff separation, but would be able to get the DOS to OS conversion underway immediately."

Because the DOS to OS conversion occured in the multicompany environment of Wheelabrator-Frye, 630 programs were converted along with approximately 400 jobs or JCL members. Included in the conversion were two accounts payable systems, two accounts receivable systems, online CICS modules, a general ledger system, an inventory system, two sales systems and two payroll systems.

Day and a staff of four shouldered responsibility for the overall project, JCL generation and unit testing.

On April 17, one week earlier than planned, the DOS to OS conversion took place. Day explained, "We were forced to change over everything all at once because we consolidated master files with groups of files under one master file name. The interrelationships of systems and files meant several systems required the use of the same files. Though it was frightening, and we had contingency plans in case of a system failure, nothing like that happened and we had a clean conversion the first time around."

"For our conversion, we generated JCL first and then linked the programs to UCC-2," Day said. "We established our test files, tested the converted systems and validated the test results. We repeated all the steps for each system until we were ready to cut-over to production. We established up-to-date master files, moved all applications to MVS production systems and then followed up the project by reviewing all converted systems, auditing production and writing a follow-up report to management."

Seven-Step Plan Aids Conversion

A smooth IBM DOS-to-OS conversion is made easier with a little preplanning, according to Rick Day, project manager for the Chemicals and Coatings Group of Wheelabrator-Frye, Inc.

"Valuable assistance came from a seven-step work plan which we created before the conversion began. Our plan could easily be adapted by anyone facing a conversion."

The plan consisted of:

- Documenting all systems, including programs, files, operating procedures, backup/restore procedures, restarts and so forth. Once a conversion is underway, previous procedures have proven to be easily forgotten unless they are specified beforehand.
- Evaluating conversion requirements, including people, hardware, software and end user involvement/training.
- Developing installation standards for JCL and also for programming and operating procedures. These were published and strictly enforced throughout the conversion.
- Establishing a detailed conversion plan. This included what was to be done, by whom, when (including start and completion dates) and management approval of the plan. Day said it was particularly helpful as a means of determining if his group was on time, ahead of schedule or needed to accelerate its work to get back on schedule.
- Establishing conversion procedures, including such things as tailoring documentation and establishing sign-off criteria and procedures for program conversion, system testing, JCL generation, file conversion and user validation.
- Selecting a pilot conversion system which will thoroughly test all the procedures. At Wheelabrator-Frye, this involved conversion of an inventory system because it contained both Cobol and assembler programs, Vsam and Isam files.
- Doing a trial run of conversion procedures and tools, revising as needed.

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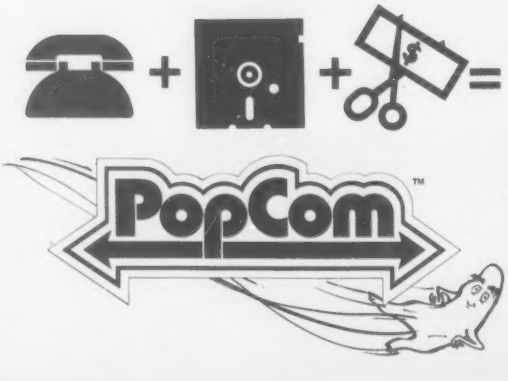


For Honeywell's 'Multics'

Conference Facility Released

PHOENIX — Honeywell, Inc. has announced an electronic conference facility software package for users of the company's Multics Release 10.0.

Called Multics Forum, the product reportedly allows an on-line meeting among multiple participants to take place at different times and locations while providing documentation of events.

Participants need not be present at the same time in order to take part in the meeting, a spokeswoman said. The chairman designates attendees who may observe the proceedings on a terminal screen or enter comments in response to other discussions by entering a transaction specifier code, according to the spokeswoman for the company.

The facility is available for a $150 monthly licensing fee with a minimum term of 12 months.

Honeywell may be reached through P.O. Box 6000/T-60, Phoenix, Ariz. 85005.

Information Science Offers 'Insci/80 Payroll Service'

MONTVALE, N.J. — Information Science, Inc.'s Services Division has entered the payroll services field with the introduction of an integrated, on-line payroll and human resource service.

The Insci/80 Payroll Service is intended for companies with 100 to 15,000 employees.

The service reportedly provides a maximum 48-hour turnaround time from the receipt of data through Applied Digital Data Systems, Inc. Viewpoint 60 terminals — supplied with the service — to the delivery of checks and reports to the user.

There is a basic fee of $35 per pay period and an approximate charge of 50 cents per check, depending on the services provided.

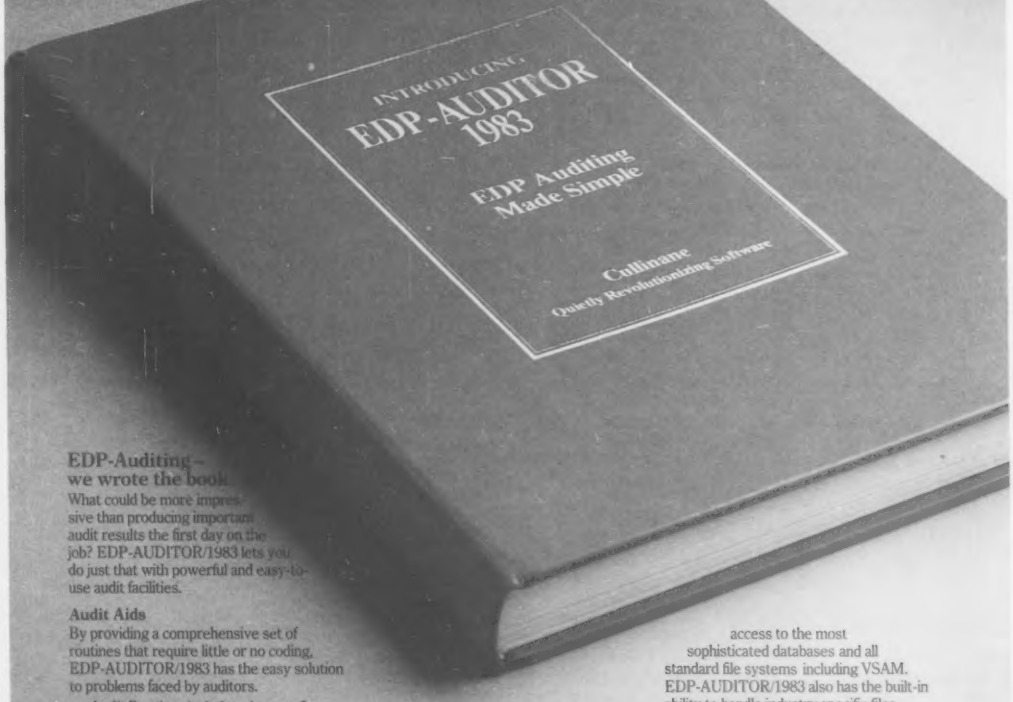
The vendor is located at 95 Chestnut Ridge Road, Montvale, N.J. 07645.

1983 WINTER AUDIT SEMINAR SCHEDULE

Albany, NY	February 8
Allentown, PA	February 15
Baltimore, MD	January 18
Birmingham, AL	January 20
Boston, MA	January 18
Burlington, VT	February 23
Charlotte, NC	January 12
Chicago, IL	February 22
Columbia, SC	February 10
Columbus, OH	February 24
Dallas, TX	January 20
Dayton, OH	February 3
Denver, CO	February 22
Edmonton, ALT	February 24
Greensboro, NC	January 27
Hartford, CT	February 16
Houston, TX	February 15
Indianapolis, IN	February 16
Lexington, KY	January 27
Little Rock, AR	February 17
Los Angeles, CA	January 18
Louisville, KY	January 20
Macon, GA	February 22
Meadowlands, NJ	January 11
Merrimack, NH	January 13
Miami, FL	January 13
Milwaukee, WI	February 9
Minneapolis, MN	January 18
Montgomery, AL	February 1
Montreal, QUE	February 8
Newport Beach, CA	February 16
New York, NY	January 18
Philadelphia, PA	February 3
Phoenix, AZ	January 26
Pittsburgh, PA	February 22
Portland, ME	January 19
Richmond, VA	February 15
Sacramento, CA	February 1
San Diego, CA	February 23
San Francisco, CA	January 18
Savannah, GA	February 8
Seattle, WA	January 25
Somerset, NJ	February 15
South Bend, IN	January 27
Vancouver, BC	January 20
Washington, DC	February 8
Worcester, MA	February 16

Cullinane quietly revolutionizing software

Introducing EDP-AUDITOR/1983: it makes EDP-Auditing simple.



EDP-Auditing — we wrote the book.
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Audit Aids
By providing a comprehensive set of routines that require little or no coding, EDP-AUDITOR/1983 has the easy solution to problems faced by auditors.

Audit Routines include aging, confirmations, sampling, and many other special processing routines. *Computer Processing Routines* anaylze programs with routines such as source code comparison.

Application Routines perform the entire audit on a wide range of packaged applications. *Graphic Routines* generate pie charts, bar graphs, trend lines and other graphics for easy visual analysis.

Audit Language
The EDP-AUDITOR/1983 Audit Language makes simple reports easy to produce, and also has the power to handle complex reports. It is this combination of ease-of-use and power that makes EDP-AUDITOR/1983 the most successful audit software ever.

Automatic File Converter
The new Automatic File Converter completely automates the task of converting COBOL file definitions to EDP-AUDITOR/1983 definitions regardless of the complexity of the file. For the first time ever auditors can automatically keep up with data processing department changes.

Database Access
EDP-AUDITOR/1983 provides very easy access to the most sophisticated databases and all standard file systems including VSAM. EDP-AUDITOR/1983 also has the built-in ability to handle industry specific files.

Audit Dictionary
The Audit Dictionary increases your audit control and independence. It provides a central location for storing, maintaining and retrieving the file descriptions or other necessary documentation for your audit environment.

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Take a good look at the Model 120. It has a special tilt-swivel base that lets you adjust the computer to your eye level. And a super-clear, easy-to-read display. It has special function keys to help guide you through the program. And something else you shouldn't overlook: HP-IB. The interface bus that allows you to hook-up printers and plotters to the computer as easily as you plug the computer into your wall.

Now, take a look inside the Model 120. You'll find the software every decision-maker needs. A powerful database management system... WordStar® word processing... and VisiCalc,® the electronic spreadsheet. But unlike some other personal computers, it takes just one keystroke to give commands—instead of two or three. That saves you a lot of time... and frustration.

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It's HP's new Series 200, Model 16.

The Model 16 uses the new state-of-the-art 3½" micro-floppies and gives you the power, memory and graphics capabilities you've asked for. (8 MHz, MC68000 micro-

Decision-support in an executive size. The Model 120.

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processor. 16/32 bit architecture. Memory expandable up to 768K bytes. 300 x 400 pixel screen resolution.)

And it also has some extra features you probably wouldn't expect. There are three languages to choose from—enhanced BASIC, compiled Pascal and HPL. And a comprehensive library of software packages to go with them. We built HP-IB and RS232 interfaces into the machine. (So you can attach peripherals or instruments without adding I/O cards.) And we even included a special rotary control knob that lets you adjust instruments or control motor speeds the same way you'd tune in a radio station.

Portable power for the professional on the move.

If you spend as much time out of your office as in it, you'd probably like a way to take your office with you. And now you can—with HP's Series 70, Model 75. It's a powerful, battery-driven computer that fits in your briefcase.

With its typewriter-like keyboard, 16K RAM (expandable to 24K) and 48K ROM, the HP-75 acts like a full-size desktop computer. But it's just a little larger than an airline ticket folder. And it weighs only 26 ounces.

What can such a small machine do? Investment or financial analysis. Real estate. Statistics. It can manage files. Write memos. Keep track of your appointments...and let you know when it's time to go. In short, the HP-75 can do just about anything a full-size computer can do. Except it can do it while you're sitting on a plane.

Back down on the ground, you can use the HP-75's HP-IL interface to hook-up a video monitor, TV screen, printer or plotter.

You'll be glad to know that the HP-75's price tag is easy-to-take, too. The basic package comes in at under $1,000.*

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TECHNALYSIS CORPORATION

Packages Released for PE 32-Bit Processors

DALLAS — Systems Research Corp. has announced three software products designed to operate on Perkin-Elmer Corp. 32-bit processors.

The PE Performance Evaluator (Pepe) is a performance monitoring and measurement device comprised of both hardware and software. Pepe reportedly will summarize activity such as system loading, memory management, I/O and process status to help isolate system bottlenecks. It improves computer system performance, according to the vendor.

The software/firmware is available in three levels — Pepe I, II and III — and it ranges in price from $2,500 to $9,750.

The second product, the Cobol Optimizer, operates on the intermediate Common Assembly Language (CAL) source code produced by PE's Cobol compiler and is said to perform a series of reductions and modifications resulting in a new CAL source. That source, when assembled, reportedly will occupy less memory and will execute in less CPU time than the original version. The price is $4,500.

Finally, the firm's Cobol Global Cross Reference program was designed to give a programmer a quick way of locating data names, copies and literals used in one or more Cobol programs. The package costs $2,750.

Systems Research Corp. is located at Suite 100, 14677 Midway Road, Dallas, Texas 75234.

DSS Unveiled For VAX/VMS

TORONTO — A decision support system for Digital Equipment Corp. VAX/VMS systems has been introduced by The Management & Planning Software Group (MPS).

Interactive Decision Support System (IDSS) features include a full-screen facility that enables users to enter data on-line directly onto an electronic spreadsheet, a built-in editor that checks for errors, true English language capability, integrated data base with data dictionary and full color graphics, according to the vendor.

IDSS is currently available on DEC VAX computers.

IDSS is priced between $30,000 and $60,000. MPS is located at Suite 201, 201 Consumers Road, Willowdale, Toronto, Ont. Canada M2J 4G8.

'CBLVcat/Vtoc' Gets Addition

REXDALE, Ont. — Compute Bridgend, Ltd. (CBL) has announced the addition of Vsam tuning and subset displays to its Vsam Catalogs/Volume Table of Contents (CBLVcat/Vtoc) package for IBM systems running under DOS, OS and VM/CMS operating systems.

The package was designed to provide savings on required direct access storage device space, increase list catalog processing speed, provide faster subset listings for interactive prime-time monitoring, avoid Vsam defaults, provide Vsam-managed SAM support and an improved Vtoc display/modify for DOS and CMS users.

A subset feature displays the number of records that can be held in the primary space allocated to the file, the vendor said.

CBLVcat/Vtoc costs $3,000 or rents for $75/mo from CBL, Suite 107, 30 Baywood Road, Rexdale, Ont., Canada M9V 3Z1.

Interface for Printers, Graphics Systems Out

CARROLLTON, Texas — A software package said to interface host computer graphics systems to phototypesetters and high-speed electronic printers has been announced by Image Research, Inc.

Plot 97 was designed to print business and technical graphs, schematics, flowcharts, circuit diagrams and line art on nonimpact printers and phototypesetting equipment. Output can be readily merged with text, the vendor claimed.

The system supports output to the Xerox Corp. 9700 and the Autologic, Inc. APS 5 phototypesetter. Plot 97 costs $19,500; the firm can be reached through P.O. Box 116135, Carrollton, Texas 75011.

Test Sites Needed for Micro-CPU Link

ELIZABETH, Colo. — A consultant here is putting out a call for potential test sites for a micro-mainframe link software package that is currently running, but not ready for full release.

Duane O'Shay is looking for interested users who would be willing to participate in the definition of enhancements to the product prior to the general public marketing.

The software currently supports normal terminals (live keyboard and CRT); nested transmit files (up to 12 levels); parameter passing between levels (up to 35 parameters); and key capture mode.

In addition, it saves received data on disk and can transmit, receive and key capture data at the same time, he said.

Wait conditionals reportedly are time (up to 99 sec); line feed; character strings; and operator continue. It includes delay directive and a mode for nondisplay of commands to preserve the CRT screen for screen-driven programs.

O'Shay said the software has the capability to execute a planned terminal session without operator intervention.

O'Shay can be contacted at 36259 Forest Trail, Elizabeth, Colo. 80107.

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Security Package Unveiled For Honeywell's DBMS

MECHANICSBURG, Pa. — Caci, Inc.- Federal has announced an on-line security product called Security-II for users of Honeywell, Inc.'s Data Management IV Transaction Processing data base management systems on Honeywell Level 66 and DPS 8 systems under Gcos.

Security-II was designed as an on-line, real-time system, providing protection for the transaction processing environment as well as individual transaction processing, the vendor said. Through the use of identification codes and passwords, the package reportedly prohibits on-line access of unauthorized users.

In addition, transaction processing is limited to authorized user transactions, as defined by the security administrator. Security verifications and modifications are maintainable on-line.

Security-II is available for $7,300 from Caci, Inc.- Federal, Advanced Systems Department, 5010 Trindle Road, Mechanicsburg, Pa. 17055.

Job Stream Generator Out For HP 3000 MPE Users

CINCINNATI — An interactive job stream generator for the Hewlett-Packard Co. HP 3000 Multi-Programming Executive (MPE) operating system has been announced by Thoman Software Corp.

Batch/Generate operates through user-specified model files that are used as input to the program. At runtime, the program prompts the terminal operator to enter values for variables in the model file.

These values are inserted into MPE commands and data and used to control generation. The generated temporary file is then streamed and purged. Batch/Generate features conditional and repetitive generation, nesting of all functions and inclusion of other files.

The price is $500 from 1821 Summit Road, Cincinnati, Ohio 45237.

Editing Software Fits DEC PDP-11

SUDBURY, Mass. — EEC Systems, Inc. has announced an interactive command-line editing package for Digital Equipment Corp. PDP-11 systems running under the RSX-11M/Plus operating system.

ICE-11M is said to provide RSX system users the ability to edit command lines before or after their execution. Command lines may be edited using cursor/function keys to insert or delete characters or words.

As command lines are dispatched, they are stored by ICE-11M on a push down stack to a maximum depth of 20. Each historic command line may be recalled, edited and automatically reissued, the vendor said.

ICE-11M costs $995 for a single CPU license from the firm at 327/E Boston Post Road, Sudbury, Mass. 01776.

Air Quality Tool Out on UCC T/S

DALLAS — University Computing Co. (UCC) has announced an interactive air quality modeling package of three modules available on a time-sharing basis through UCC's Control Data Corp. Cyber-based service center.

Unamap uses emission and meteorological data to calculate projected air pollutant concentration, a vendor spokesman said. Traggy is an interactive puff trajectory model for applications ranging from accidental releases to long-range transport. Gplot is an interactive scientific plot package that plots best-fit curves on linear, log and probability scales and is suitable for publications, according to the spokesman.

A typical time-shared run costs $150 to $200, a spokesman said from 1930 Hiline Drive, Dallas, Texas 75207.

Language Sort Out for VAX-11

LEXINGTON, Mass. — Evans Griffiths & Hart, Inc. has announced Vsort, a machine-language sort for the Digital Equipment Corp. VAX-11 under VMS.

The software reportedly handles fixed-record-length, relative, sequential and its Ross/V files with support for both span and nonspan records.

Vsort is said to accept Ascii, integer, floating point and packed decimal keys. Integers may be signed or unsigned, single- or multiple-precision. Floating-point numbers may be single-, double-, G- or H-precision.

The package contains a standalone version of the sort and two callable versions that may be linked with applications, the vendor said. The standalone version provides an interactive user interface.

A single-CPU license for Vsort is $2,500. OEM and quantity discounts are available, the vendor said from 55 Waltham St., Lexington, Mass. 02173.

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When It Comes To Managing Human Resources LOOK TO GENESYS FIRST

'DMS/HP,' System Tool Released for HP 3000 Users

VAN NUYS, Calif. — A distribution management system for the Hewlett-Packard Co. HP 3000 series of computers has been released by Coastal Information Systems, Inc.

Called DMS/HP, the package is an order processing, financial and accounting system for wholesale distributors and manufacturers, a spokesman said. The on-line, integrated package includes modules for order processing and billing, distribution requirements planning, accounts receivable and others.

A parameters file allows the package to be field-customized for security, tax treatment, discounts and terms. The software includes an automatic system maintenance subsystem for "hands-off" source file maintenance and librarian functions.

The basic system is priced at $55,000 in object code, with source code costing an additional $18,000 from Suite 110, 15643 Sherman Way, Van Nuys, Calif. 91406.

'Aideset' Out for Wang Vs

NEW YORK — A development aid for the Wang Laboratories, Inc. VS line of minicomputers has been announced by Start Systems, Inc.

The Advanced Interactive Development Environment (Aideset) interfaces directly with the Wang VS Command Processor to provide a structured programming environment, according to a spokesman for the vendor.

The software features a Cobol frame generator that generates a structured Cobol frame program tailored to an installation and an enhanced message queuing facility said to let users receive incoming messages on demand.

Aideset reportedly can be tailored to work in any program development environment running on the VS line under Wang operating system Release 5.0 or better. Aideset costs $2,500 from the firm at 1120 Ave. of the Americas, New York, N.Y. 10036.

'Bill of Distribution' Fits IBM CPUs

ATLANTA — American Software, Inc. has announced its Bill of Distribution package for IBM mainframes running Vsam/CICS.

The package reportedly operates with the firm's Distribution Requirements Planning package to provide features for handling complex networks, simultaneous sources or replenishment and assemblies and product substitutions.

The package costs $34,000, the vendor said from 443 E. Paces Ferry Road, Atlanta, Ga. 30305.

GAP Analysis Announced

PALO ALTO, Calif. — Remote Computing Corp. has announced a GAP analysis service available in conjunction with its Savings and Loan Planning financial planning system.

The GAP analysis reportedly shows the interest rate maturity of balance sheet items and highlights out-of-balance (GAP) positions. GAP analysis provides for forecast GAP positions up to three years in the future, a spokesman said.

The service includes features that allow users to design their reports. A summary of the balance sheet or a detailed breakdown of specific categories is available. The package also handles matching of reverse repurchase agreements and specific investment securities.

A typical GAP run costs $35 to $50 from 1076 E. Meadow Circle, Palo Alto, Calif. 94303.

BCC Enhances 'SB-5' Package

ELMWOOD PARK, N.J. — Business Controls Corp. (BCC) has announced screen-painting and report-painting enhancements for its System Builders (SB)-5 Automated Cobol Program Development System, Version 2.3.

The new screen-painting feature of SB-5 was designed to permit Cobol programmers to reduce the time required to develop entry and inquiry programs. The new report-painting capability was designed to facilitate the programmer's development of complex report programs. Because screen- and report-painting are easy to perform, nontechnical users can create their own less complex, single- or multiple-file reports and inquiry programs without programming knowledge because no additional code or SB-5 logic parameters are needed, the vendor claimed.

SB-5 reportedly automates the design, development and documentation of Cobol application software on all major Digital Equipment Corp. computer systems. These screen- and report-painting enhancements are about to be distributed to all supported SB-5 users and will be standard in all SB-5 systems licensed in the future. List price for SB-5 licenses range from $10,000, depending on the target computer system.

BCC is located at 507 Boulevard, Elmwood Park, N.J. 07407.

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Sharing their insights on OA planning, integration and implementation issues are, among others: Dr. Michael Hammer, associate professor at MIT; Dr. John McQuillan, assistant to the president of BBN Information Management Corp.; Patty Seybold, principal editor of The Seybold Report on Office Automation; and John Walsh, Communications director of Avon Products, Inc.

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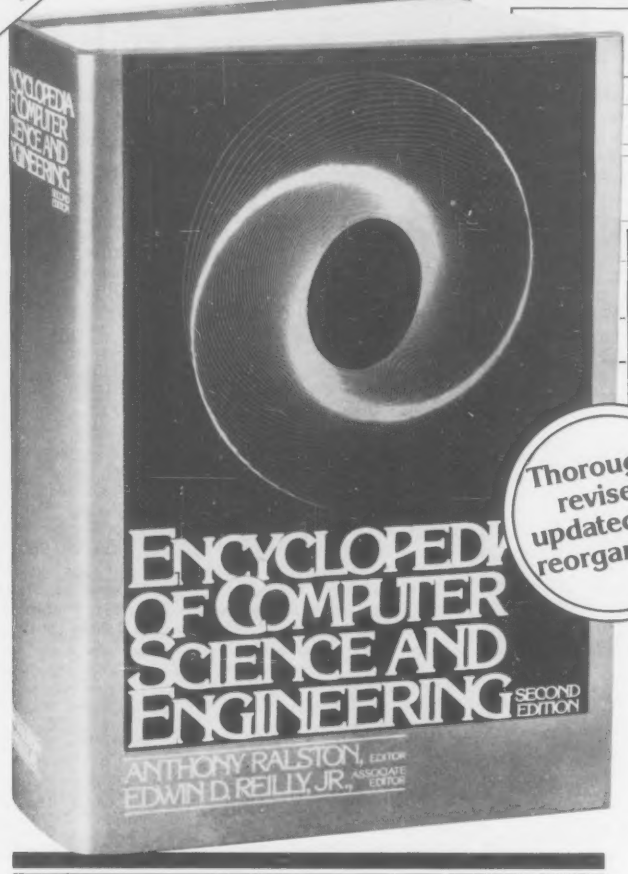

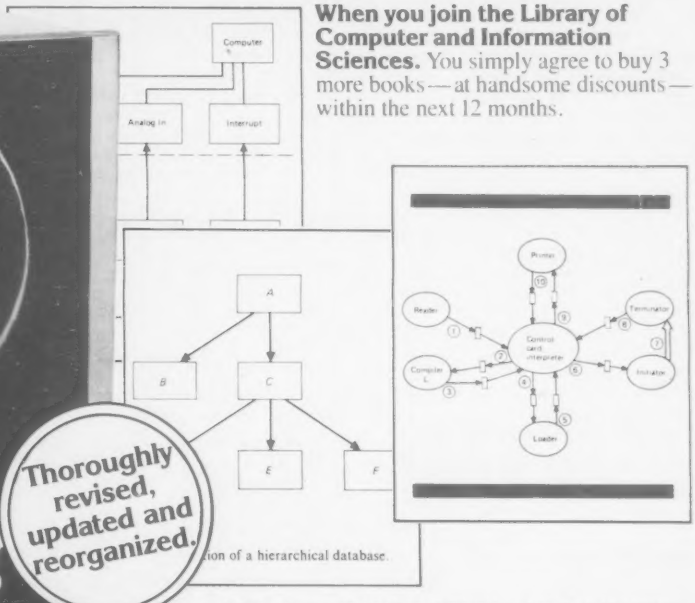

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Harris Mini Series Gets CAD Package

FORT LAUDERDALE, Fla. — Harris Corp. has announced an interactive drafting software package for its series of minicomputers.

The Design Oriented Graphics System is a computer-aided design (CAD) package for producing engineering drawings. Drafting commands can be controlled from a digitizing tablet or screen menu, the vendor claimed.

The package reportedly will spool plot files for hardcopy output as well as archive drawings into a data base. Symbols and shapes can be defined and stored in the library. Functions include view select, facilities, symbols, measure, line, hatch, text, line type, dimension, delete, archive, copy, drag and construct.

The license fee is $26,000, or $8,000 for colleges and universities. A six-month trial lease is $6,000, applicable to the full license fee from Harris Corp.'s Computer Systems Division, 2101 W. Cypress Creek Road, P.O. Box 6200, Fort Lauderdale, Fla. 33310.

Includes Sort Package

CCS Unveils Four HP 1000 Aids

ABERDEEN, N.J. — Corporate Computer Systems, Inc. (CCS) has announced four products for users of the Hewlett-Packard HP 1000 computer.

Soft Plus is a sort package that reportedly sorts records in ascending order using up to 80 key field/record.

Image Interface is a set of subroutines said to reduce the programming time required to use HP's Image data base systems.

Transparent Activity Sampling Program (Tasp)/1000 reportedly permits users to produce system activity reports at user-selected intervals. Separate sampling modules collect information on program status change, I/O controller availability and CPU idle time.

Finally, Terminal Manager provides terminal data entry and control for most HP terminals, a spokeswoman said.

Prices range from $800 to $3,800 from CCS at 675 Line Road, Aberdeen, N.J. 07747.

T/S Stock Market Data Bases Out

TORONTO — I.P. Sharp Associates Ltd. has made three stock market data bases available on their time-sharing system.

At the same time, the company announced an APL work space documentation aid available on a time-shared basis or on any computer running Sharp APL.

The United States Stock Market data base gives current and historical prices and volumes for securities on all U.S. exchanges, including common and preferred stocks, warrants, rights, units and mutual funds. Exchanges listed include the New York, American, Montreal, Midwest, Boston, Pacific, Toronto and Philadelphia-Baltimore-Washington.

The *Financial Times of London* Share Information data base provides information on securities listed on the London Stock Exchange. Both published and unpublished share prices are included, a spokesman said.

The *Financial Times of London* Actuaries Share Indices gives index values and associated information for each of the 42 Institute of Actuaries Indices published in the *Financial Times*.

WSDOC, the APL documentation aid, reportedly can be used to provide documentation during system building or after program completion. Features include a cross-reference table of all identifies for each function, a tree-structure diagram of the calling hierarchy of all functions and a listing of every package's objects.

Timeshare prices for all packages are $1/hour connect time, 25 cents to 45 cents/CPU and 70 cents/thousand characters transmitted or received. Perpetual license fee for WSDOC is $15,000 from Rosanne Wild, I.P. Sharp Associates, Suite 1900, 2 First Canadian Place, Toronto, Ont. M5X 1E3.

Tymlabs Unveils Tool For HP 3000

AUSTIN, Texas — Tymlabs Corp. has announced a software facility for the Hewlett-Packard HP 3000 computer that reportedly allows both batch and on-line processing to be controlled from any HP 3000 terminal.

Called Menu Processor, the package is said to allow users to initiate an on-line program, start a batch update run or print a report with one keystroke. Features include multilevel menu capability, logging of user processing, IF/THEN/ELSE facility, forms alignment, task initiation by name or number, data embedded in tasks, distributed operation of batch systems, standardized user/application interface, shareable menu and task files and multiple step selection with sequential execution, a spokesman said.

The package costs $850 from 211 E. 7th St., Austin, Texas 78701.

'Sttar' Fits System/34

HIBERNIA, N.J. — Direct Access Software Index, Inc. has introduced a time/equipment/expense tracking and accounts receivable system for the IBM System/34.

Sttar tracks time and accounts receivables, as well as billing, personnel and equipment in an on-line, interactive mode. Sttar is said to deliver audit controls, on-line edits, master file updates, automatic retainer fee accrual.

A one-time license fee for Sttar costs $7,500 from the firm through P.O. Box 33, Hibernia, N.J. 07842.

'Payroll System' Fits VAX

CONSHOHOCKEN, Pa. — Personnel Data Systems, Inc. has announced that its Payroll, Personnel and combined Payroll/Personnel Systems now operate in the Digital Equipment Corp. VAX-11/VMS environment using DEC's Forms Management System.

In addition, the Payroll System reportedly now satisfies the reporting requirements of the Internal Revenue Service's Individual Retirement Account-related 401(k) legislation.

The Payroll/Personnel System was designed to run on any major vendor's hardware with any teleprocessing monitor and any file-access method. All but I/O routines are written in Ansi Cobol.

Prices range from $18,000 for the basic Payroll System to $75,000 for on-line Payroll/Personnel, a spokesman said from 15 E. Ridge Pike, Conshohocken, Pa. 19428.

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Off-Hours Help Offered by HP

PALO ALTO, Calif. — Hewlett-Packard Co. has announced an emergency software support program for users of the HP 3000 computer who experience operational problems outside of regular working hours.

The Off-Hours Emergency Assistance program reportedly offers troubleshooting help on weekends, holidays and from 5 p.m. to 8 a.m., Monday through Friday.

A spokeswoman said HP promises a callback from a system engineer within two hours of the customer's call. On-site support within a specified maximum response time is also guaranteed, she said.

Customers who sign up for the service pay a start up fee of $250, which applies as a credit toward the first call if it is made within six months of the contract date. A variable fee is also charged for each call, the spokeswoman said.

Information is available from Inquiries Manager at HP, 1820 Embarcadero Road, Palo Alto, Calif. 94303.

P-System Gets 'Spreadsheet'

BEAVERTON, Ore. — Payroll and spreadsheet software programs for the computer neophyte that run under the UCSD P-System operating system have been introduced by Timberline Systems, Inc.

The first in a series of seven packages to be available in 1983 — called the Medallion Collection — Spreadsheet is said to make such calculations as net present value, internal rate of return, linear regression, correlation coefficients, standard deviation and variance. All calculations are made in real-time.

Payroll — to be available in February — calculates all necessary payroll check information and payroll taxes, prints checks and check stubs, enters and maintains personnel payroll records and generates management reports for a firm with up to 500 employees.

Packages to come during 1983 include Accounts Receivable, Accounts Payable, Inventory, General Ledger and Custom Reporter. Spreadsheet costs $395; Payroll will cost $690 from the firm at 10550 S.W. Allen Blvd., Beaverton, Ore. 97005.

RPG-11 Preprocessor Out for System/34

FRESNO, Calif. — The Rocker Corp. has announced the RPG-II Preprocessor for the IBM System/34.

The software was designed to eliminate or minimize coding of file and input specifications in RPG-II programs, according to a vendor spokesman. It reportedly will free the programmer from having to describe the files and fields in every program.

The Preprocessor utilizes the Data Dictionary in which the programmer defines the files and associated fields, the vendor spokesman said. The software costs $150, including source code, from the firm through P.O. Box 12487, Fresno, Calif. 93779.

'Vue' Enhanced for DEC, HP Units

CUPERTINO, Calif. — National Information Systems, Inc. has released Version 3 of its Vue project management system for Digital Equipment Corp. Decsystem-10 and Decsystem-20, VAX-11 and PDP-11; and Hewlett-Packard Co. HP 3000 computers.

Among the new features of the software are hammocking and an exception resource report. New options are multiproject reporting and graphics capabilities. Vue will also be available on Perkin-Elmer Corp. and Honeywell, Inc. machines by next January.

Hammocking is said to consolidate a group of tasks into a higher level task and to provide a general view of the project. The exception resource report allows the user to set resource level upper and lower limits for each catagory and obtain a report showing all days when resources are outside those limits.

Version 3 costs $16,000. With the multiproject and graphics options, the software costs $23,500 from the firm at Suite 245, 20370 Town Center Lane, Cupertino, Calif. 95014.

Version 2 of 'Adasynch' Out

CAMBRIDGE, Mass. — Intermetrics, Inc. has released Version 2.0 of Adasynch, a Pascal program said to check the grammatical form of an Ada source program.

The new version conforms to the July 1982 draft proposed Ansi standard for Ada and runs on most computers that support Pascal. Adasynch provides a line-numbered listing of the original program errors and their locations. Version 2.0 attempts to continue processing while the error location is displayed. A cross-referencing program provides a summary of programmer-defined names showing where they appear in the source program.

The package, delivered in source form on magnetic tape, costs $900 from Intermetrics, Inc., 733 Concord Ave., Cambridge, Mass. 02138.

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Texprint Releases 'HCGS'

BURLINGTON, Mass. — Software said to provide a low-cost alternative for hard-copy generation of charts, diagrams, maps and other text/graphics data has been introduced by Texprint, Inc. for Tektronix, Inc. and California Computer Products, Inc. (Calcomp) machines.

Host Computer Graphics Software (HCGS) is said to bridge the gap between Tektronix, Calcomp and Digital Equipment Corp. graphics users by allowing software written using either Calcomp or Tektronix Plot-10/4014 calls to produce text and graphic hard copy on the Decplot LA-120 or other DEC dot-matrix printers/plotters.

Written in Fortran, HCGS is supplied in source form for DEC systems or any Ansi/Ascii-compatible system running Fortran. The price is $695 with 30-day delivery from 8 Blanchard Road, Burlington, Mass. 01803.

'Ease2' Out for DG MV Line

WESTBORO, Mass. — Data General Corp. has entered an agreement with Wessco to make Wessco's Ease2 structural analysis program available on DG's MV family of 32-bit minicomputers.

Ease2 is composed of seven modules for static or dynamic, linear finite element analysis of large structural models, a spokesman said. Basic structural analysis capabilities of the package include static analysis, eigenvalue extraction, transient response analysis, response spectrum analysis, random response and harmonic response.

Ease2 also includes a preprocessor that reads and checks the structural model data, a postprocessor that creates initial or deformed geometry plots and a postprocessor that plots structural output vs. time or creates special response curves from acceleration output, the spokesman said.

The package costs from $6,000 to $20,000 for the MV/8000, depending on configuration. For the MV/6000, the range is $4,000 to $12,000.

More details on the package are available from Wessco through P.O. Box 878, Elk Grove, Calif. 95624.

T/S Service Announced

WELLESLEY HILLS, Mass. — Datacrown, Inc. has announced the Alternative to In-House Computing, a computer time-sharing service.

Using high-speed terminals, clients can connect to Datacrown's IBM-based system through a continentwide telecommunications network. Datacrown manages the hardware, communications and systems operations. The client's in-house processing staff directs resources to meet the needs of their business, the vendor said.

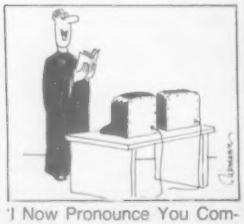
The service is billed on an as-used basis, Datacrown said from 20 William St., Wellesley Hills, Mass. 02181.

DDA System Enhanced

SUNNYVALE, Calif. — Data Design Associates (DDA) has announced a system enhancement for its Fixed Asset System said to incorporate changes mandated by the Tax Equity and Fiscal Responsibility Act of 1982.

The package, which runs on all processors supporting Ansi-Cobol, was designed to control depreciation expenses, provide tax information and manage corporate property. It also offers standard depreciation methods and shorter cost recovery as now allowed under federal tax law. The enhancement incorporates the new rules associated with investment tax credit (ITC) and recapture of ITC and depreciation.

Prices start at $17,000 from 1250 Oakmead Pkwy., Sunnyvale, Calif. 94086.



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Micronotes

Visicorp has unveiled **Vision** (Operating Environment) for the IBM Personal Computer, software designed to enable users to work with a number of application products at one time.

The vendor described Vision as an applications environment designed to run on top of the underlying host operating system. It reportedly will support multiple application products, and the host layer provides the means of adapting the Vision environment to other processors and operating systems.

With Vision, applications are displayed on a screen that corresponds, visually and dynamically, to a business professional's desktop, the vendor explained. Each application appears on the screen as a window.

The user accesses one or multiple applications and transfers data between them, using a pointing device (mouse) to move the screen cursor. One window may show a current word processing draft, while a second may display related spreadsheet calculations. Users reportedly can view simultaneously the separate results of each application and combine them into a single document.

According to the vendor, users working on one application who wish to begin another move the mouse to the desired window, push the select button and open that window and its related application. To open new windows or close existing windows, users move the cursor to the appropriate command located on the command line at the bottom of the screen. Multiple windows can be sized and relocated on the screen using the Frame command, and data can be moved from one window to another using the mouse and the Transfer command.

The initial Vision offering will include spreadsheet, word processing, data base management and graphics applications and will be available this summer, the vendor said. Full details on pricing are not yet available, but a Visicorp spokeswoman said it will be comparable to the pricing on other Visi series software, which range from $100 to $400 per copy.

Visicorp has also introduced **Visilink**, a software package that allows users of the spreadsheet program, Visicalc, to transfer data to their personal computer from Data Resources, Inc.'s data bank. It is designed to allow easy access to current worldwide economic and business information in a format for immediate Visicalc analysis. The product is available for Apple Computer, Inc. Apple II and II Plus personal computers with at least 48K bytes of memory and two disk drives. It is available for $250.

Visicorp is located at 2895 Zanker Road, San Jose, Calif. 95134.

Alpha Software Corp. has introduced the **Apple-IBM Connection**, a software package designed to allow information transfer between the Apple Computer, Inc. Apple II and the IBM Personal Computer. Among its advantages it is said to be able to transfer spreadsheet information running on the Apple to the IBM without rekeying. It is available for $195. More information is available from the vendor at Suite 400, 6 New England Executive Park, Burlington, Mass, 01803.

Gregg Corp. has introduced **Mainline**, a software program for the Apple II that is said to request and pass information from remote mainframe data bases to the microcomputer via telephone. It is designed to simplify the formatting and transfer of data. It is available for $495 from the vendor at 100 Fifth Ave., Waltham, Mass. 02181.

Infostar, a data base management system that reportedly was designed for nonprogrammers was announced by Micropro International Corp. for use on any microcomputers running under Digital Research, Inc.'s CP/M operating system. Infostar is menu-driven and includes a cursor for data entry that enables the user to draw forms on the screen, the vendor explained. In addition, the software is designed to enable users to generate preformatted quick reports by selecting the data desired. Infostar also includes full report-writing capabilities.

Available immediately, the complete Infostar software system includes a user training guide with example data files and other reference documentation at a suggested retail price of $495, the vendor said from 33 San Pablo Ave., San Rafael, Calif. 94903.

An enhanced version of its **DB Master** data base file management software has been announced by Stoneware, Inc. for the IBM Personal Computer. The enhanced package was unveiled at the Comdex/Fall '82 show. At the same time the vendor announced that its **Video Tape Training Library** for Apple Computer, Inc.'s Apple II has been expanded to include the IBM Personal Computer.

The updated version of DB Master has a 3,000-char./record, whereas the Apple version permitted 1,200 char./record. The new version also makes a browse mode available so users can select specified fields for screen display from a series of data base records, the vendor noted.

DB Master for the IBM Personal Computer will be available on floppy disk during the first quarter of 1983. It is priced at $499 and requires an IBM Personal Computer with at least

(Continued on Page 48)

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Senior Consultant

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Programmer Analyst

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PENNWALT | Unequalled support
Senior Financial Analyst

"Comshare's response to my needs is always immediate. Their account people understand my applications and provide valuable help in solving difficult financial modeling problems."

LAWRYS FOODS INC | Modeling simplicity
Marketing Research Supervisor

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For information, call Shary Price at (313) 994-4800, Ext. 478.
Or write COMSHARE, Decision Support Systems Marketing, P.O. Box 1588, Ann Arbor, MI 48106.

COMSHARE
Advancing the Art of Decision Making

(Continued from Page 47)

192K bytes of random-access memory and two 320K-byte double-sided disk drives. A printer is recommended, the vendor added.

Stoneware has also introduced **DB Master Stat Pak**, a statistical software package for Apple Computer, Inc. Apple II Plus systems, that reportedly allows users to analyze stored data in DB Master files using a broad variety of tests. This product is available for $99 from Stoneware, Inc., at 50 Belvedere St., San Rafael, Calif. 94901.

The **Business Graphics Analysis Pak** reportedly allows users of Radio Shack TRS-80 Model III desktop business computers to create graphs by selecting the desired type and size of chart and entering the data from the keyboard or from disk files. This product is available for $174.95 from Radio Shack at 1800 One Tandy Center, Fort Worth, Texas, 76102.

Quic-N-Easi AG is a new applications generator and data base manager that was designed to help people with no computer background produce professional applications. This product operates on Digital Research, Inc. CP/M-based microcomputers and consists of two parts, the applications generator and the report generator. It is available for $295 from Standard Micro Systems, Inc., 136 Granite Hill Court, Langhorne, Pa. 19047.

Micronotes

Micro Applications Group has introduced **MAG/Base**, a product line that reportedly allows end users to create their own applications without any previous knowledge of programming. Available in three levels for beginners to advanced computer users, **MAG/Base1** costs $295, **MAG/Base2** is $495 and **MAG/Base3** is priced at $795. The vendor is based at Suite 205, 20201 Sherman Way, Canoga Park, Calif. 91306.

Exemplary Software, Inc. has announced **Rank Master**, a software product for Apple Computer, Inc. Apple II Plus users. The tool reportedly allows decision makers to consider qualitative factors in the decision-making process. Priced at $195, the software is available from the vendor at Suite 46, 725 Cowper St., Palo Alto, Calif. 94301.

A software system that reportedly permits any Digital Research, Inc. CP/M-based microcomputer to communicate with mainframe, minicomputer and microcomputer hosts, including systems from Prime Computer, Inc., was introduced by Infoservices, Inc.

Infocomm reportedly provides a conversational mode that converts the microprocessor to a dumb terminal for routine interactive processing on a Prime system. **Infohost** is another product that runs in conjunction with Infocomm and resides on a Prime system. This product oversees the file transfer between a Prime system and any microcomputer using Infocomm, according to the vendor. Infohost, bundled with five Infocomm licenses, costs $3,500. Infoservices, Inc. is located at Suite 22, 1728 Montreal Circle, Tucker, Ga. 30084.

EPS, Inc. has announced the release of the microcomputer version of its FCS-EPS decision support system, called **MicroFCS**. Now any models developed on personal business computers can also be run on minicomputers or mainframes with no change in syntax, the vendor said. The IBM Personal Computer version will reportedly run on the System/34 and also on IBM mainframes. The system is also available for the Apple Computer, Inc. Apple II and North Star Computer, Inc.'s Advantage. This product costs $2,000 from the vendor at One Industrial Drive, Windham, N.H. 03087.

Multiplan, Microsoft, Inc.'s electronic work sheet, is now available for users of the IBM Personal Computer. This product reportedly boasts the full capability of a planning and modeling software tool. It is priced at $250. Further information can be obtained from Microsoft at 10700 Northup, Bellevue, Wash. 98004.

A data conversion program called **Superdata Interchange** that allows data generated by one applications program to be used for other applications and vice versa was announced by Sorcim Corp. Priced at $50, the program is available from the vendor at 2310 Lundy Ave., San Jose, Calif. 95131.

New Era Technologies, Inc. has unveiled a networking package of applications software called **Microcomputer Information Support Tools (Mist)**. This product line reportedly enables users to construct their own "electronic information node." Mist 2 is designed to run on Digital Research, Inc. CP/M-based microcomputers and is priced at $1,500. Mist 16, the IBM Personal Computer version, is scheduled to be available in the first quarter of 1983 and will cost approximately $1,800. Further information can be obtained from the vendor at Suite 924, 2025 Eye St. N.W., Washington, D.C. 20006.

Altos Computer Systems, Inc. has announced a **Dibol compiler** that allows users of Digital Equipment Corp. Dibol-11 applications to move software to all Altos microcomputers.

At the same time, the company announced that applications running under Pick & Associates, Inc.'s Pick operating system can run on all Intel. Corp. 8086-based Altos 16-bit microcomputers. Other operating systems that run on Altos systems include Digital Research, Inc.'s CP/M and MP/M, Phase One Systems, Inc.'s Oasis and Microsoft, Inc.'s Xenis/Unix and MS-DOS.

The Dibol compiler costs $2,500 from Altos at 2360 Bering Drive, San Jose, Calif. 95131.

Personal Systems Technology, Inc. has announced a software package for the IBM Personal Computer which the company claims turns a portion of random-access memory into an instant-access disk drive. The **Insta-drive** memory resident disk simulator allows up to 320K bytes of memory to be defined as a simulated disk drive, a spokesman said.

The package is compatible with the IBM PC-DOS command library. Files may be created, copied, deleted, edited and manipulated by existing programs without modification. Insta-drive operates under PC-DOS versions 1.0 and 1.1 and costs $49.95 from Fred Berry at 22957 La Cadena, Laguna Hills, Calif. 92653.

Dickens Data Systems, Inc. has announced the **Wall Street Plotter**, a financial plotting package for users of Apple Computer, Inc. computers running DOS 3.3.

The plotter is compatible with text files containing historical quotes captured from popular quote services by standard telecommunications packages, a spokesman said. The package costs $125 from Dickens at Suite A, 3050 Holcomb Bridge Road, Norcross, Ga. 30071.

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Protocol Converter Allows Linkup Of Peripherals

AUSTIN, Texas — An interactive protocol converter said to allow the connection and operation of a wide variety of peripheral equipment, such as CRT terminals and line printers with IBM mainframes, is available from KMW Systems Corp.

The Series II 3270 emulates an IBM 3274 Systems Network Architecture or 3271 Binary Synchronous Communications controller. It also performs all required error-checking functions, translates the data to Ascii and outputs it in serial asynchronous or byte parallel format to and from user-attached devices, the vendor claimed.

Other 3270 features include transmission blocks up to 2,048 characters in length, selectable control unit address, separate internal buffer for each device and support for most consoles on the market. It is available in one-port through eight-port configurations and costs between $3,095 and $6,945, KMW Systems said from 8307 Highway 71 W., Austin, Texas 78735.

No Clear-Cut Winner In Local Nets, Says Report

By Bruce Hoard
CW Staff

SAN JOSE, Calif. — No single approach to local communications systems is dominating most sites, according to a recent report from Strategic, Inc.

In addition, *Impact of Broadband Local-Area Networks* predicted the market for local communications systems — including local-area networks, private branch exchanges (PBX), protocol converters and data switching systems — is on the verge of a "major shake-up."

The study is based on a survey of 50 large-site users of local communications systems. The study involved a large-scale program of interviewing multiple respondents at each site and covering a number of different functions and departments.

It maintained that different types of local communications systems are gaining footholds in different parts of user organizations, and the same organization may be installing several types of local-area networks, front-end or data switching systems, protocol converters and one of the newer PBXs.

The survey results also indicate that a high proportion of sites are moving toward integration under the umbrella of higher level software systems. It claims that the question of whether to go with baseband or broadband systems has been answered by most users.

"The key to large-site competition will not be so much a particular solution as the ability to provide software that enables these solutions to function as components of a broader system," according to Strategic.

The big mainframe manufacturers will be the main force in this market and IBM will "clearly" be out front, Strategic maintained. IBM will offer all the necessary components, let users configure them as they will and then tie them all together under Systems Network Architecture.

The study also showed major implications for AT&T and the Bell operating companies. "We have to bear in mind that the picture we have been describing will happen in the 3,000 or so large-site users in this country," Strategic stated. "Those are also, of course, sites that represent a large chunk of AT&T business."

It predicted that AT&T and the Bell operating companies are aiming to move more into the large-site data communications business, but will meet a lot of competition getting into the voice business for the first time.

The successful competitors will be those who have a variety of compatible solutions for both voice and data traffic, and if AT&T and the Bell operating com-

(Continued on Page 52)

'Observer' Runs on PDP-11

Package Monitors Decnet Status

MAYNARD, Mass. — Digital Equipment Corp. has announced a software package that reportedly monitors the operational status of all nodes and lines in a Decnet network and collects performance and usage information.

Called Observer, the software runs on PDP-11 processors running either RSX-11M or RSX-11M-Plus operating systems and Decnet software.

The package reportedly includes a report generation facility that processes collected data and produces reports summarizing node- and link-level traffic, error rates and availability.

Using a terminal on the node running Observer, a network manager can call up on-line, real-time displays of the status of any node or line in the network, a spokesman said, as well as statistics on traffic loads and transmission errors.

The package is priced at $15,000 from DEC, Maynard, Mass. 01754.

Bitelex Workstation Unveiled

ELMSFORD, N.Y. — A dual-language microprocessor-based communications workstation has been introduced by the International Digital Electronics Association (Idea).

The Bitelex workstation is designed to communicate over international and domestic networks such as TWX, direct distance dialing and Telex. It is described as being a multiport concurrent device.

The workstation reportedly has bilingual capabilities that allow it to display, transmit and print in any two languages. In addition to the English-only version, an Arabic/English option is available.

The basic unit consists of a 12-in. green or white phosphor display, full Ascii keyboard, 80 char./sec impact printer, single-board control unit with 64K bytes of random-access memory and 16K bytes of programmable read-only memory, two serial communications ports with built-in modems, a parallel interface port and a multitasking central program.

The workstation prices start at $3,500 and it is available from Idea, 6 Westchester Plaza, Elmsford, N.Y. 10523.

Satellite Unit Has Multihop Transmission

WESTLAKE VILLAGE, Calif. — Bunker Ramo Electronic Systems has introduced a satellite data system said to be capable of high-speed multihop satellite transmission of computer data. It features full-duplex data flow, optional computer control, self diagnosis and troubleshooting.

The BR 1720 Satellite Data System was designed for the banking, finance, insurance and retail industries and major industrial concerns. It transfers digital error-free data between computers and/or tape drives over satellite or terrestial media at speeds up to 6.3M bit/sec.

The starting price for a single BR 1720 system is $96,500 from Bunker, 31717 La Tienda Drive, Box 5009, Westlake Village, Calif. 91359.

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CRT Unit Emulates VT132

SUNNYVALE, Calif. — Falco Data Products, Inc. has introduced a CRT terminal that reportedly emulates the Digital Equipment Corp. VT132 and features 80- and 132-col. formats.

The TS-132 also offers advanced video, block mode, local-printer port and 14 programmable function keys, the vendor claimed. Programs written for the DEC machine can be directly transported without modification and the keyboard can be used by a VT131- or VT100-trained operator.

Local storage is said to be increased by efficient memory management that converts unused horizontal area into additional vertical storage. The terminal also features two RS-232-C ports,including a 128-char. set to produce business graphics.

The terminal is available for $1,650 from Falco Data Products, 1286 Lawrence Station Road, Sunnyvale, Calif. 94086.

Works With Ascii Terminals

Tri-Data Unveils Modem

MOUNTAIN VIEW, Calif. — An asynchronous Bell 212-compatible modem has been announced by Tri-Data Corp.

The OZ 225 Network Modem reportedly can be installed with any asynchronous, Ascii terminal that provides an RS-232 connection as well as those connected to a host computer or a network processor, the spokesman for the vendor said.

Telephone connection can be originated from either the terminal's keyboard or automatically from the phone number directory of the OZ 225, the vendor spokesman said.

The unit also has directories for logon information, logon response verification and number dialing restrictions with a total directory storage of up to 2,000 characters, the spokesman said. A call can be retried up to 15 times at preestablished intervals or can be linked to another directory entry for alternated number dialing. Once connection has been established, the OZ 225 can automatically logon and verify the logon response, the vendor spokesman said.

The OZ 225 is available for $1,490 from the vendor at 505 E. Middlefield Road, Mountain View, Calif. 94043.

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Or write Datapoint Corporation, Marketing Communications T41CW, 9725 Datapoint Drive, San Antonio, Texas 78284.

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Solid State Unveils PBX

ATLANTA — Solid State Systems, Inc. has introduced a computerized private branch exchange (PBX).

The Communications and Energy Optimizer has expanded capacity up to 1,800 stations and up to 384 trunks. Solid State's "one unit" design combines automatic call distribution with the branch exchange so there is no need for anciliary devices.

The increased computer power reportedly allows the system to generate detailed reports on traffic, system usage and time data. The optimizer comes with station message detail recording and automatic route selection/Least Cost Routing capability.

The branch exchange is available at approximately $400/line installed.

Solid State Systems is located at 1990 Delk Industrial Blvd., Marietta, Ga. 30067.

Cluster Unit Fits 3270 Net

SCOTTSDALE, Ariz. — Phaze Information Machines Corp. has introduced an IBM-compatible cluster display station that operates in an IBM 3270 network.

The Model P3278 Information Display Station can be used with IBM 370, 8100 and 4300 series computers and their plug-compatible equivalents, the vendor claimed. It is a replacement for the IBM 3278-2 Display Station and attached to a wide variety of IBM terminal controllers through the IBM 3278 coaxial protocol.

The display station is a three-piece modular architecture that includes separate terminal display, keyboard and logic modules. It features a 12-in., green-phosphor display.

The Model P3278 is available for $1,995 from the vendor at 7650 E. Redfield, Scottsdale, Ariz. 85260.

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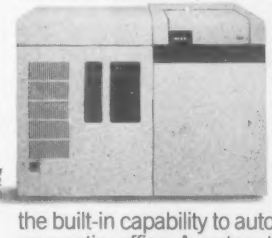

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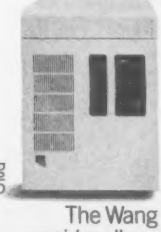

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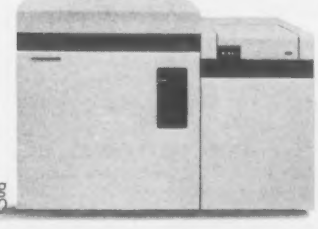

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Ansi-Compatible Terminal Can Be Tailored by User

MINNEAPOLIS — A user-configurable, Ansi-compatible editing CRT terminal has been introduced by Teleray Division of Research, Inc. The terminal can be tailored to emulate almost any asynchronous terminal or be compatible with almost any asynchronous computer or operating system, a vendor spokesman said.

The Model 7 will accept up to 32 variable-length dynamic functions. Sixty-eight selectable operating parameters are retained in nonvolatile memory, even when the power is turned off.

Among its other standard features, the Model 7 has two fully buffered bidirectional RS-232 ports, musical operator alerts and a screen-saver feature. It is available with a 9-, 12- or 15-in. CRT screen and white, green or amber phosphor.

The price of the Model 7 is approximately $1,295 depending on the design. More information is available from Teleray, Box 24064, Minneapolis, Minn. 55424.

Codex 8150 Out For Local Nets

MANSFIELD, Mass. — Codex Corp. has announced the 8150 local distribution service unit for intracomplex communications.

The unit can operate over distances of up to 23 miles at up to 19.2 bit/sec. The 8150 includes local and remote unattended diagnostic testing and an asynchronous test pattern. The unit is available in both stand-alone or card versions. For high-density applications, a nest enclosure is available to house up to 16 cards, the vendor said.

The 8150 can be used in point-to-point or multipoint operations and accommodates tail circuit applications off long-haul modems or those involving Codex multiplexers and switches, the vendor said.

The 8150 costs $335 from Codex at 20 Cabot Blvd., Mansfield, Mass. 02048.

CRT Terminal Offers Colors

HAUPPAUGE, N.Y. — Applied Digital Data Systems, Inc. has announced a general-purpose color CRT terminal that offers eight colors: red, green, blue, magenta, cyan, yellow, black and white.

The Viewpoint/Color CRT also provides the ability to create business graphics and displays 80 characters in 25 rows including a status line. A set-up mode allows the user to apply color while the form is on the screen, so that the user can evaluate the color changes, a vendor spokesman said.

The terminal costs $1,095, the vendor said, and is available from Applied Digital Data Systems, which is located at 100 Marcus Blvd., Hauppauge, N.Y. 11788.

No Leader Seen In Local Nets

(Continued from Page 49)

panies stay with just a PBX/twisted pair approach, they will lose out," the study claimed.

In many sites, distribution will be a determining factor in vendor selection, the study claimed, adding "very few vendors have the ability to provide the depth of support at the moment." The study costs $20,000 and includes two copies of the three-volume study and a private briefing, Strategic said. The firm can be reached through P.O. Box 9747, San Jose, Calif. 95157.

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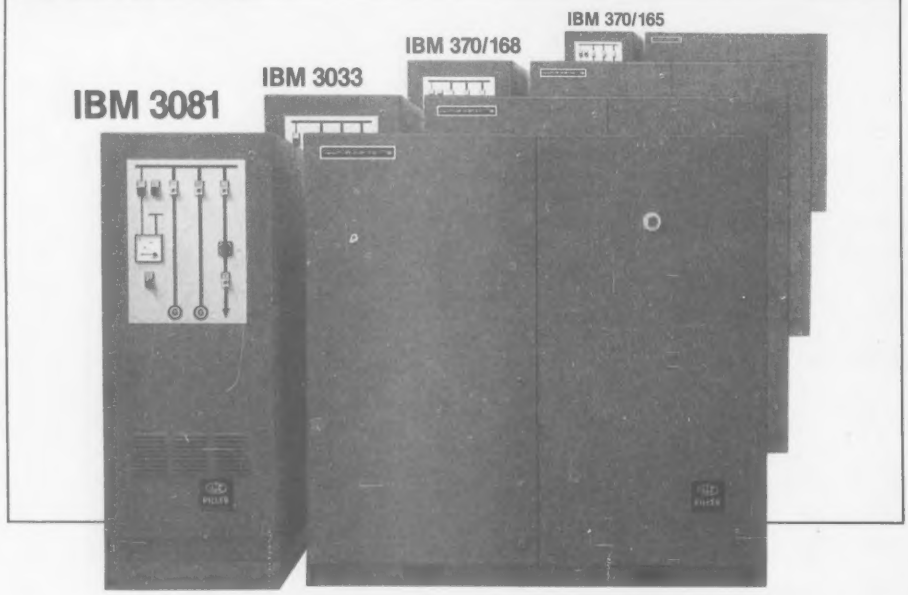

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IN DEPTH

POLITICS AND SYSTEM JUSTIFICATION

A Guide to the Political Forces in a Corporate Setting And How Systems Personnel Can Steer Them to Advantage

By Richard K. Lindgren

Systems development personnel almost universally disdain political influences in the work place. In the course of design and implementation, they often regard instances of office politics as deviations to be "systematized" along with the more formal processes of the business. Systems developers also come up against political forces in the financial justification process. The financial powers-that-be may not evaluate the costs, benefits and spending priorities in the same systematic way the rest of the project was analyzed. The ever-logical systems analyst often winds up frustrated and outclassed by decision makers who have a better understanding of the real power structures at work. Political decisions, in the sense used here, are aimed at managing a diversity of people, goals and special interests. In complex corporate structures, there is often no clear, single utility to be maximized in setting goals. Economic rationality, while still the primary guiding force in profit-making organizations, is tempered by social considerations, cultural

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IN DEPTH

norms and personal values. Like a pluralistic government, the organization must satisfy these considerations to some extent to maintain unity and direction.

Peter Keen and Michael S. Scott Morton, in their book *Decision Support Systems*, note that decision making takes on more of a pluralistic tone at higher levels of the organization. The lower ranks are more subject to the rigidity of "standard operating procedure." The bigger the project, the more likely it will be evaluated by higher levels of management, and thus from a more pluralistic perspective, taking into consideration factors other than economic benefit.

The frustration of systems development personnel with political decision making can best be understood in the light of their talents. Success at the entry level of their profession depends almost entirely on logical thinking. Many companies require only a minimum of technical knowledge for entry-level jobs, testing applicants instead for aptitude in logic and providing them with customized, in-house training.

The next requirement for continued advancement in the computer field is the ability to assimilate and apply technical knowledge. Political skills are not essential to moving ahead until one reaches the management level (although they often help deter problems in systems planning and implementation at lower levels). The systems development manager may be ill-prepared to move from a homogeneous, largely nonpolitical atmosphere to the company of other functional managers who have succeeded largely because of their political skills.

To those attracted to data processing, computers are the ultimate rational adversary; DPers succeed by channeling that logic to useful ends. For them, structuring organizational processes into systems is the name of the game, but it is the antithesis of the political processes that influence decision making in much of the rest of the firm.

In many other areas of the firm, and in higher levels of the systems organization, there is often not as much intrinsic satisfaction with the object of labor. People with talents in nontechnical areas find satisfaction in effective interaction with a diversity of people. They see economic rationality as a second, often nonevident motivation; pluralistic decision processes are seen in their most positive sense as the dominant reality.

Systems developers are often out of their element when confronted with such a decision environment.

Political Processes

The decision processes usually called "political" are focused on channeling and controlling the pluralism of the corporate environment, as opposed to the "ideal" of economic rationality or the arbitrary prescriptions of "standard operating procedure." The most common of these political processes are

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advocacy, negotiation, consensus and coalition-building. The lines between some of these are difficult to define, but they all have both advantages and drawbacks.

Advocacy is the basis for all other aspects of political decision making. Pluralism demands that all those who wish to gain the support of a diverse group must be prepared to press their case thoroughly, clearly and continually in both formal and informal forums. The belief that the "numbers speak for themselves" frequently leads system planners down to defeat. "Lobbying" is very close to advocacy in concept, although this term has more negative connotations.

Effective and appropriate advocacy is required whenever systems development personnel foray into "hostile" territory for system design, implementation and funding. The system with "obvious" economic or technical merit often fails because the developers fail to be their own advocates, to enlist the support of user groups and to support those groups in some of their own noncomputer-related issues.

Negotiation is the process of bringing the conflicting advocates closer together. In its positive sense, it involves give-and-take bargaining in which all parties involved prioritize the various components of their advocated positions. In order to reach a common end, the parties are prepared to modify their positions. In a negative sense, negotiation involves overstating demands in the hope of emerging with expected needs fulfilled. "Brinksmanship" is a second negative feature; those who are willing to hold out as long as possible are able to beat the competition.

Information systems developers often fail in the negotiation process not only because they are generally not of a mind to negotiate, but also because their typical project proposal lacks flexibility. On one extreme of inflexibility is the proposal that seeks to accomplish the minimum job for the minimum cost. Funding tends to be easier to get for a small project, and once it is approved, the desired "add-ons" can be justified on a smaller, marginal basis. The initial project, however, can only be accepted or rejected as a total package, because of its limitation to the minimal requirements.

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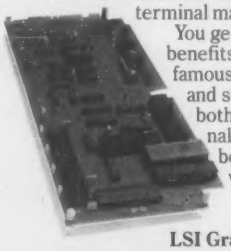

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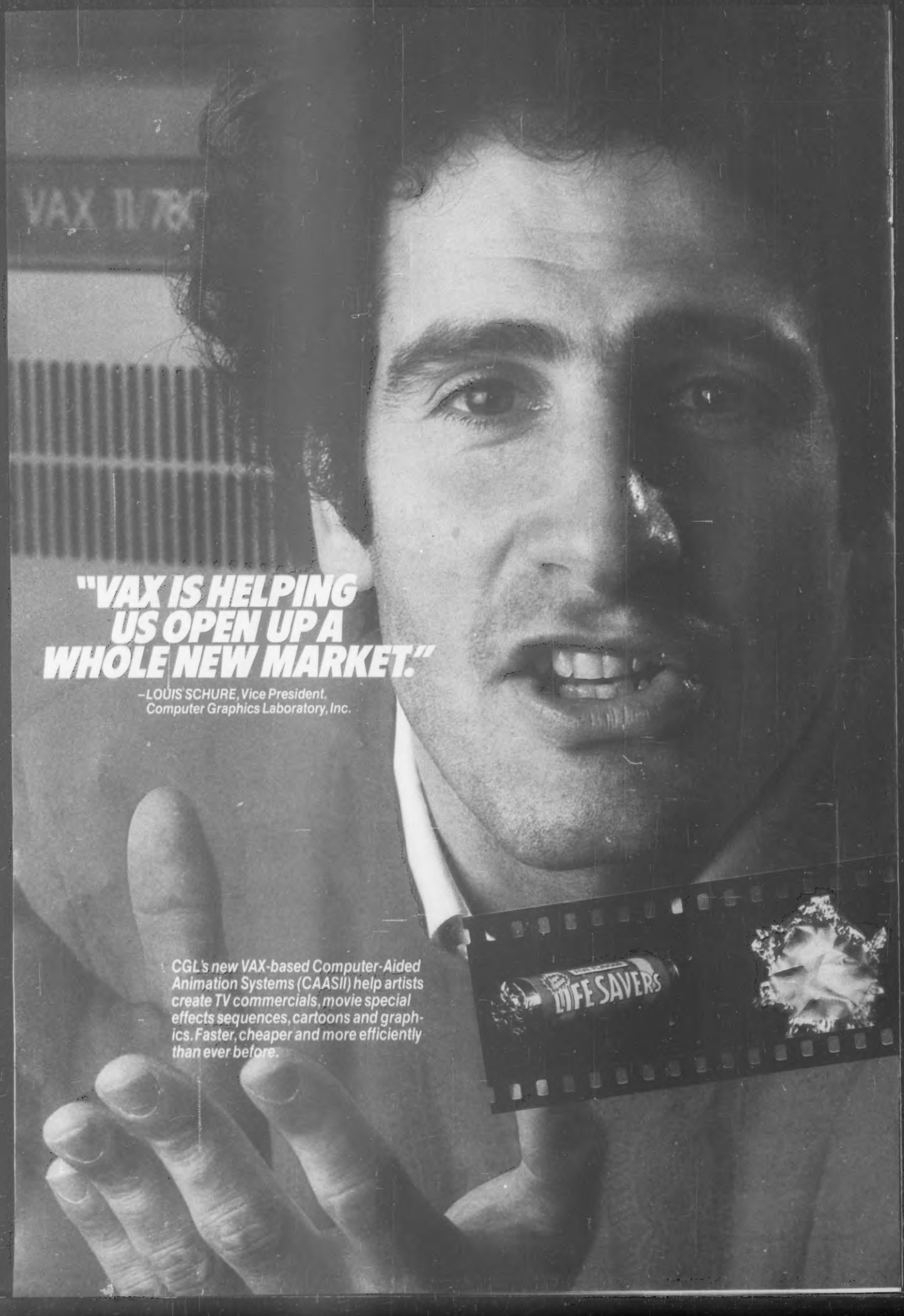
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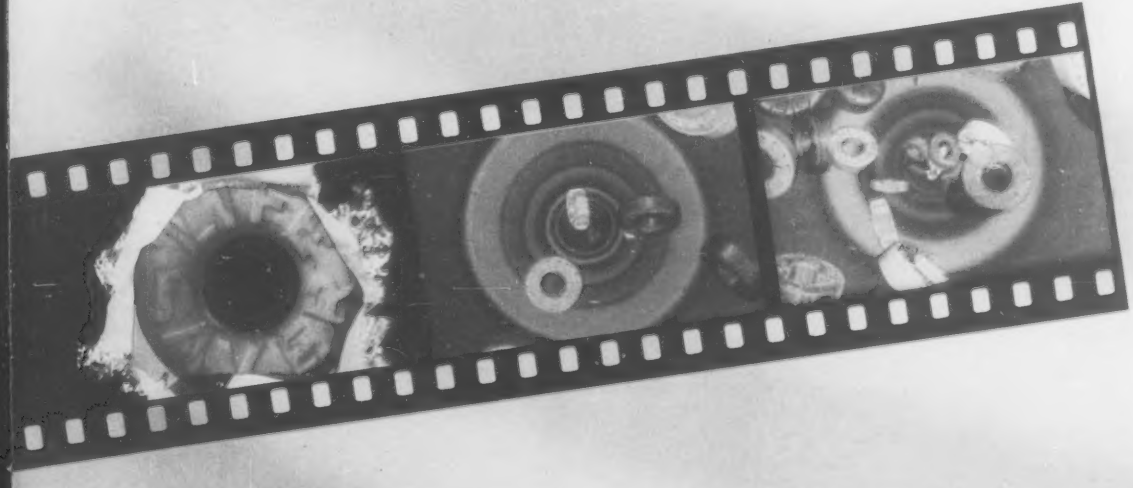

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the moon" in terms of facilities to be acquired and information to be provided — without a breakdown into negotiable modules and without separate analyses of the alternative marginal costs and benefits. The common strategy here is the hope that the noncomputer-literate parties involved in the justification process will not understand the options and that the whole proposal will be approved intact if the people with the purse are in a spending mood.

As J. Emery notes in *Systems Analysis Techniques*, the optimum system does not supply all useful information, since some information costs more than it is worth. In an application of microeconomic theory, he instead suggests that information to be provided be analyzed on a marginal-cost vs. marginal-benefit basis. The system should optimally handle information up to the point where the incremental hardware or software costs exceed the incremental worth of the information.

As the debate often centers around the value of those incremental benefits, a political modification to this view suggests that the project should be presented as a series of incremental possibilities, where additional benefits can be demonstrated by the additional hardware, software and personnel options. The value of the incremental information may be debatable and difficult to quantify, but a well-defined step function for costs can be an important tool in arriving at a negotiable range of expenditures. Understanding the negotiable range is key to justifying systems in this environment.

Consensus is the most positive outcome from negotiation, where all parties are able to speak as one in terms of organizational direction. In order for consensus to exist in information systems development, the computer specialists must take an active role in negotiating that agreement, not only in systems matters, but in all related aspects of the organization's function.

Even in organizations where "standard operating procedure" dominates the lower level decision processes, goal setting at the highest levels tends to remain much less structured and much more of a consensus-type process. It is often easier, then, to precede a major systems project, which must pass through formal justification procedures, with a cultivated agreement in principle among the powers-that-be. The proposed system can often be more easily "pulled" through channels where consensus already exists than "pushed" through opposition by the weight of its economic benefits.

In those organizations where consensus can not be reached, work usually goes on with a series of temporary and informal alliances of enough accumulated power to govern various aspects of the business. ***Coalition-building*** is the most delicate of political processes, requiring tact, flexibility and a broad view of the organization's needs. However, coalitions often involve mutual backscratching and face-saving. Again, systems developers fail in political matters by default if they refuse to seek out and lead coalitions. They abdicate their role in determining information systems direction.

Other Pluralistic Factors

The facets of political decision making are many. Indeed, a somewhat facetious definition of a political decision might be "any decision that is contrary to my special interests." Several other common behaviors can be seen as having pluralistic traits as they apply to information systems development.

Expediency is the extreme variant of consensus in which the group allows a single decision maker to handle relatively minor issues himself, to dispose of them as quickly as possible. Particularly urgent or embarrassing systems issues are often handled this way. For instance, "crash" allocations of manpower and other resources, with little analysis, are common for locating and correcting critical program bugs.

A variation of negotiation common to systems projects is the use of *riders* to secure additional hardware or personnel via a project that is only marginally related. When disk storage capacity is reached, for example, the purchase price of an additional

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disk drive might be melded in with some major systems project, even though the project does not consume much of the additional capacity. While riders can significantly distort the best economic analysis models, they are commonly used to avoid scrutiny and obtain funds in a constrained fiscal atmosphere.

Various techniques can be used to facilitate group decision making. Where no clear consensus exists, conflict resolution techniques are helpful in clarifying issues, assumptions and perceived facts, separating them from purely rhetorical statements. All of these techniques can be applied in the systems justification process, especially when the group cannot agree on a system's economic benefits.

'Active participation by lower level management in meaningful decision making can encourage systems innovation by putting the power to change a process closer to where that process is performed.'

In pluralistic organizations, abrupt changes in tasks are rare and resisted. M.W. Taylor, in his book *A Computer Simulation of Innovative Decision-Making in Organizations*, has modeled the organization as the sum of the many individual decisions, each of which may be handled in one of two ways:

1. By continuing with the status quo.
2. By changing the decision process (innovating).

This model views innovation as a function of several conditions that act upon the decision maker, who makes rational choices within certain bounds, as described by H.A. Simon in *Administrative Behavior*. Several environmental conditions can be viewed in light of how they encourage or discourage innovation. Since innovation is the essence of computerization, these conditions will determine a project's fate — support or resistance.

Dissatisfaction With Status Quo

Unless the decision maker is substantially dissatisfied with the current decision process, there is no motivation to change, so it is difficult for any outside force to alter that process. A system backed by higher management, which sees the project as an economic necessity, may meet resistance from the user, who sees no need for change. Justification from a political viewpoint demands that all involved recognize the need for change.

In the realm of individual differences, some people find job satisfaction in risky ventures, while others are happier if they can avoid taking unnecessary chances. Some firms are historically risk-averse and therefore attract, over the long run, risk-averse personnel. Here the compatibility of the systems developers with the firm's risk position and their sensitivity toward attitudes in the other

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functional areas are essential to winning financial justification.

By nature and training, computer-oriented personnel are more comfortable with innovation, especially in their own areas, than is much of the rest of the firm. Since high-risk projects are likely to face opposition in a low-risk environment despite economic merit, systems personnel must often structure their projects in increments, with early stages of a lower risk, in order to win approval.

'Corporate innovation cannot be forced by economic rationality alone. A broader view of the decision-making processes is essential.'

People are naturally reluctant to change when they have spent a good deal of time or money to get where they are. Systems developers themselves are not immune to the temptation to throw good money after bad and are reluctant to drastically revise an existing system. This attitude also discourages spending on adequate feasibility studies for new applications out of fear the money will be "wasted" if the project is deemed infeasible. The best way to overcome this hurdle is to carefully document the costs of the status quo versus the benefits of the change.

Other factors that affect innovation, although less, include the amount of free or unobligated resources available and the degree to which power is decentralized. The former encourages innovation in systems matters when users have access to computer services without charges to their budgets. This may be counterproductive, however, if the user group does not feel the need to take responsibility for the system's functioning. Also, the system's true costs are often not reflected where the services are subsidized, so the resources may not be used most effectively.

Active participation by lower level management in meaningful decision making can also encourage systems innovation by putting the power to change a process closer to where the process is performed. Although some type of high-level coordination is required in systems matters, the user groups should be the primary source of system ideas and design and should have the computer expertise as close to that process as possible.

The complexity of the modern American corporation prevents any "pure" evaluation of system costs and benefits. To ignore the components of political decision making is to endanger an economically sound project proposal.

Corporate innovation cannot be forced by economic rationality alone. Systems that effect change in corporate processes must also address the pluralistic needs of users and managers. A broader view of the decision-making processes, then, is essential for success in the otherwise-rational world of computerization.

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Lindgren's articles on finance and computer applications have appeared in Data Management *and* Computer Graphics World. *He holds an MBA from the University of Michigan.*

IN DEPTH

USABILITY:

Toward a Science of User Documentation

By Edmond H. Weiss

PHOTO BY KATHLEEN GOW

Usability has become a catchword, a slogan to rally the enthusiasm of tired computer people. Just as "idiot-proof" gave way to the more congenial "user-friendly," user-friendly is yielding to "usable": the extent to which a system, program or gadget is easy to use.

The key to usability, of course, is user documentation, today broadly defined to include not only the traditional user manuals and operator guides, but also a cornucopia of books, brochures, audiovisual packages, reference placemats and fanfold quick-reference cards. However, the emerging favorite medium for user documentation is a series of screens integrated within the system or device itself.

Contrary to what some technical writers believe, clear and correct documentation cannot make a messy system neat or an awkward procedure graceful. (In fact, clear documentation frequently shows us brilliantly what a messy system we have invented.) But to realize maximum usability for a system, the documentation itself must be free of structural and linguistic flaws.

The firms that write the best documentation are those that know its purpose. In *technical documentation* (functional, system and program specifications), the best work is done by development groups who realize that documentation is essential in ensuring that systems are reliable, maintainable and modifiable.

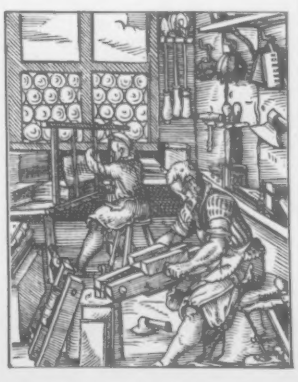
In contrast, development groups who write no technical documentation, or who document after the fact, are missing the point. A system developed without a nested series of increasingly fine specifications — each tested before the next design step begins — is probably a bad system. (Documenting a program after it has been written hardly affects the maintainability of the program; it merely shows more clearly what an unmaintainable tangle has been created.)

Fortunately, almost everyone knows what *user documentation* is for: to teach, demonstrate, motivate and remind. The only ones who fail utterly at user documentation are those who do not write any (because none of the developers knows how) or those who believe, mistakenly, that what users want is facts about the system. For the most part, users are *not* centrally interested in facts — except as they relate to tasks, procedures, transactions or the pursuit of objectives.

The most useful way to regard user documentation is to think of each manual (or videocassette or series of screens) as an instrument or device that is supposed to *control the reader*. In other words, manuals are programs for users. The analogy is inescapable: manuals and documents do for (and to) users what software does for hardware. Effective manuals not only pass data to the readers, but also drive and control their actions and, in the process, enable them to perform their tasks and do work that needs or wants to be done.

It follows, then, that what is good for a program is good for a user manual. All the design weaknesses and bugs that stop a program from running can stop a document from being usable: logic errors, missing or inconsistent items, ambiguity, tangled structures, faulty syntax, operations that exceed the capacity or abilities of the system (or reader).

Again, the analogy is clear. Although a user, unlike a machine, will sometimes "interpret away" an error of logic or impute a missing fact, most readers are generally as passive and dependent as electronic circuitry. And today's typical user — with limited



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technical background and meager reading skills — is unable to "run" when there are mistakes and bugs in the documentation.

Flaws and Failures

In many ways, the most important similarity between documents and programs is linearity. Reading (like watching and listening) is linear: one thing after another.

In user documentation, a flaw is any interruption of this normal, linear flow of reading. Any such interruption burdens the reader, lowering the book's usability and increasing the chances of a failure: a user stymied by the documentation and unable to function.

A well-designed manual should allow the reader to find an appropriate starting point in the document and, to the extent possible, continue to move forward, phrase by paragraph by page, until his need for information is satisfied. Every time the reader changes direction, whether to go from the back of the book to the front or to reread an unclear sentence, the document's usability declines.

Of course, it is inevitable that in most manuals the reader will have to skip, jump, detour and change directions. Nevertheless, every branch, loop and reversal makes the book harder to follow and diminishes its effective control over the reader.

Often, of course, these detours are deliberate. For example, an operator's guide, in explaining how to fill in a certain screen, will send the reader to a table of occupation codes 100 pages away, from which the operator will be expected to find his way back to the original discussion. But deliberate or not, inevitable or not, the detour reduces usability. In fact, every time a reader skips pages, usability declines slightly.

More often, though, these flaws are accidental or unintended, as when the same operator's guide neglects to tell the reader where the table of occupation codes is located, forcing the operator to search for it.

Generally, these documentation flaws (losses of linearity) fit three categories, depending on the kind of errors that caused them:

1. Strategic errors, which produce the largest problems, are misalignments of the documents with the users, so that the reader is seeing the wrong book. Typically, strategic flaws compel the reader to skip over huge, irrelevant sections to find what he needs; jump from one volume to another in search of missing material; search in vain for missing items that are not in any manual or file accessible to the user; or refer frequently to glossaries and dictionaries, because the manual uses language unfamiliar to the reader.

Almost every attempt to package all user and operator information into a single, encyclopedic guide will generate several of these strategic problems. Conversely, when there is a proliferation of user materials, many users will need more than one document and the probability of "volume jumping" increases.

2. Structural errors are flaws in the organization and sequence of individual books and manuals. That is, while it is one thing to make sure that a user has the right book (free from these strategic errors), it is another, more difficult thing to ensure that the user can get what he needs without frustrating false starts, big loops and wild goose chases.

Typically, structural flaws compel the reader to read sections in the manual in a sequence other than the one in the book; struggle with difficult preliminaries before getting under way; search for tables and exhibits referred to in the text and try to read two widely separated pages at the same time; fight through long, discursive passages in search of a single, small fact; or reread passages several times, because necessary background or preliminary material has been "assumed."

Structural flaws can be blamed on bad design techniques — specifically, the traditional, vague method of outlining and "specifying" a book.

3. Tactical errors result from poor or incompetent editing. Though on a smaller scale than the other flaws, these also have the effect of sending the reader hunting, sometimes within a given page or paragraph.

Typically, tactical flaws compel

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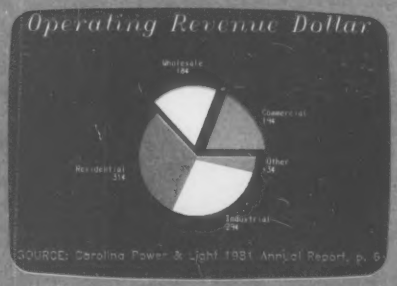
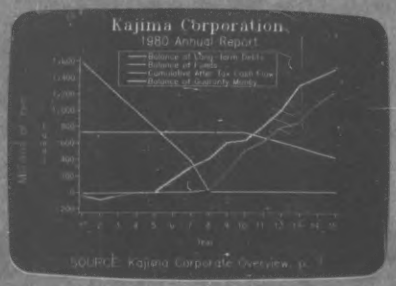
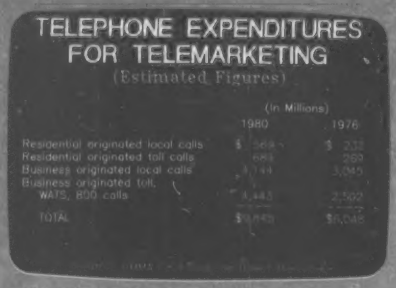


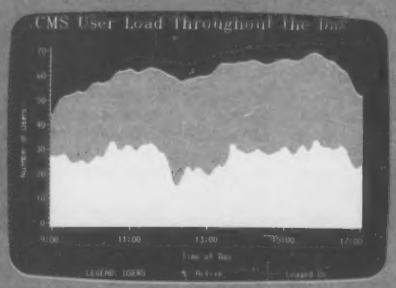
Pie Chart of Revenue



Plot of Funds*Year



Telephone Expenditures



Plot of Load*Time

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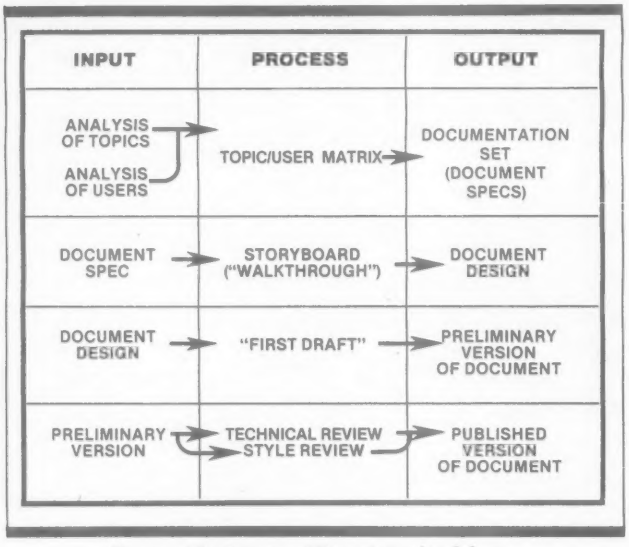

Figure 1. The Structured Documentation Scheme

readers to search for the meaning of unexplained acronyms and abbreviations; struggle with inconsistent nomenclature; reread unnecessarily difficult, tangled, ambiguous sentences and passages; or strain to relate the materials in the text to the materials in the tables or diagrams.

All first drafts are filled with tactical errors, and all tactical errors create a need to reread or loop. A badly edited instruction (for example, then-if instead of if-then) can baffle the operators, slow their performance or cause all work to stop. Remember the engineer's definition of reliability: mean time between failures (MTBF). Unedited manuals are unreliable.

Engineering a Manual

As in systems analysis and design, the key to making effective, usable documentation is to *shift the effort to the front end of the development process.* Strategic errors (the most serious) cannot be averted once the manuals have been outlined and sent into production. Structural errors become virtually uncorrectable once the first draft is written. And tactical errors resist correction once the manual is in use.

As in programming, the goal is to test and revise as early as possible: to build conceptual and working models of the documents before they are written. Figure 1 shows what I call the "structured documentation scheme," an approach that applies structured methods to documentation.

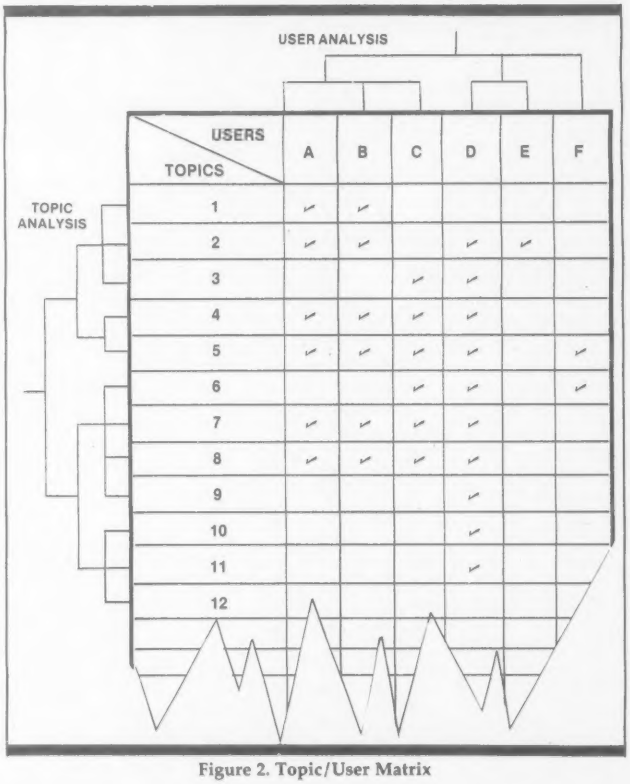

Figure 2. Topic/User Matrix

To prevent strategic errors, a team of analysts (including technical experts, documenters and users) defines the set of books, manuals, reference aids and other documentation products needed for the particular hardware or software system. This list derives mainly from a *topic/user matrix*, an array of user categories vs. system features and characteristics or topics (see Figure 2).

The analysts decide whether each of the topics is of interest to each of the user categories. Then, using this simple analysis, the team defines clusters or packages of topics that should form individual publications or other documentation products. The grouping can be by function, audience or a combination of both.

The output of this stage is a list called the documentation set, a report that names the documents to be prepared, defines their scope and content and describes the target audience and emphasis. With the addition of schedules, budgets and "book chiefs," the documentation set becomes the publications plan.

Most large firms already have a formal way of developing the publications plan; however, a poor plan may be as bad as none. At this early stage, momentous strategic errors may already be wired into the plan. If there is only one document in the plan (or too few, without any tailoring to the needs of special audiences), then the readers will be forced to struggle with irrelevant and inaccessible material — no matter how clearly it is written and presented. Conversely, if there are too many volumes without enough redundancy and overlap across books, users will often need to jump across volumes.

In short, the job of the documentation team at this stage is to test this broad plan against the anticipated uses of the documents and to keep testing until it has defined a mix or library of publications that — given the limits of time and budget — is as free from strategic problems as possible.

For each document specified in the set, there must be a detailed design — a model of the publication. The documentation set (or publication plan) contains only the broadest specifications of the manuals and other products; now, the task is to build complete, testable designs for each.

The process, as shown in Figure 3, is to conceive of each document as a collection of documentation modules (I call them "DOCs"). Thus, a conventional outline is converted to a structured outline by "decomposing" each entry in the conventional

outline into a series of headlines, each corresponding to some standard-sized module of documentation.

To solve the most serious of the structural problems (the separation of text from the exhibits to which it refers), designers should think of each module or DOC as a synoptic array of text and exhibits around a single theme. In other words, everything in the DOC can be seen at once, without turning a page.

In its simplest form, then, a module of documentation is one page of any size. That is, a DOC can be smaller than 8½ by 11 in., or it may be larger — even poster-sized. The most versatile module of documentation is two facing pages, with text on the left and exhibits on the right. This use of two-page modules in technical publications was conceived and popularized in the early 1960s by a team of editors at Hughes Aircraft; they call the concept "Sequential Thematic Organization of Publications (Stop)."

A structured outline, then, is a series of headlines, each presumed to generate one module, one DOC's worth, of documentation (see Figure 4). Obviously, the process of developing such an outline is rather unfamiliar to most professional documenters and to most amateurs — programmers and administrators conscripted into the documentation job. But ironically, the job of developing the outline does resemble the structured design process of converting program specs to module specs.

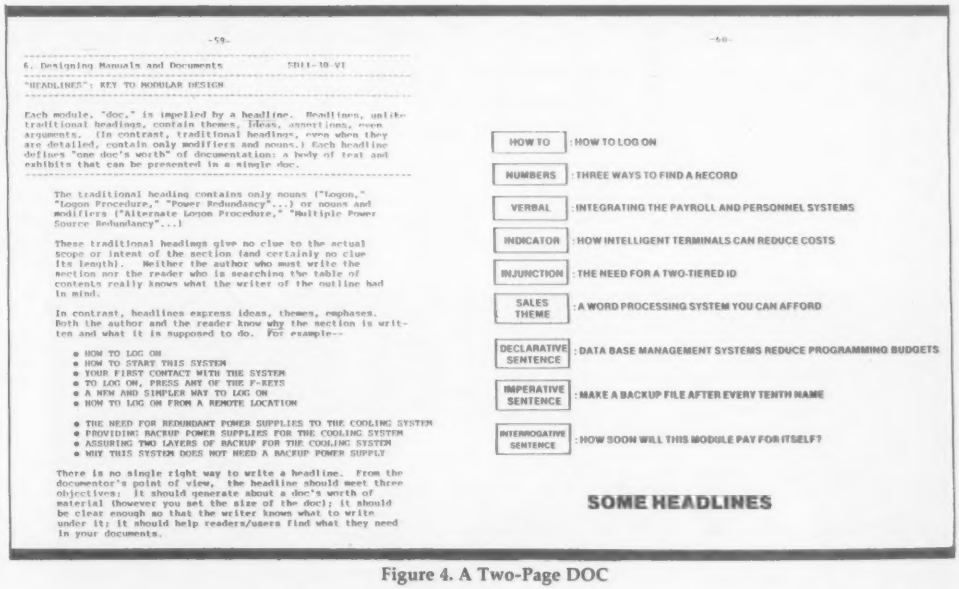

Figure 4. A Two-Page DOC

The outline is only the tentative or preliminary list of modules. Next, the book designers write a DOC spec for each module: a brief, but substantive plan saying what will be covered in the module. The spec should be clear and complete enough so that another person could finish writing the DOC and produce a result that would satisfy the people who wrote the spec. (More correctly, they could finish a first draft of the DOC.)

To test and revise the book while it is still in this "model" stage, the writers of the DOC specs post them in a storyboard or gallery, an array of all the DOC specs laid end-to-end. Then, the designers review and revise the storyboard until they are satisfied that the current sequence causes no more skipping and changing of direction for the intended users than is absolutely necessary.

When the designers are satisfied, they invite other people to "walk through" their storyboard. Among the reviewers are the likely "authors" of the missing details. The DOCs need not be finished by professional technical writers. In addition, if the storyboard is used correctly, each module can be finished independently of the others; in principle, 50 authors could produce the first draft of a 100-page manual in about two hours.

Finally, anyone with a serious interest in the manual's usability — users, marketing people, officers of the organization — is encouraged to review the storyboard, to test the model. Unlike traditional outlines for manuals, storyboards are full of substantive technical content, even

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ASSIGN DRAFTS	• WORK PLAN • "FIRST DRAFTS" OF DOCS

EDITING TESTING

Figure 3. Designing the Individual Documents

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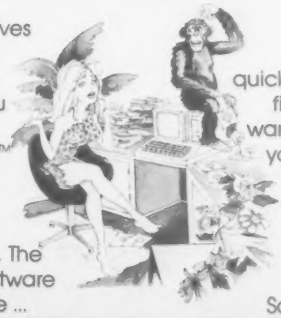

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rough drawings of exhibits and diagrams. The reviewer sees a remarkably clear picture of the book that will emerge; in contrast, the typical outline of technical publications tells the reviewer almost nothing.

The principal advantage of the storyboard technique is that it eases change and revision. A storyboard can be revised radically 10 times a day; in contrast, a full first draft will be patched and plugged, but never really redesigned.

'Almost any competent technical writer or editor can eliminate most bugs in a first draft. But most user documentation reaches its readers without a single glance from someone who knows the rules of English.'

Interestingly, this radical revision consists of only a few "moves." The full range of changes can be accommodated by *decomposing* — making one module into more than one; *consolidating* or collapsing small modules into one; *inserting* or *deleting* modules; or *restructuring* — moving a cluster of modules to a different place in the sequence. Most changes result in a new DOC spec. DOC specs take about 10 minutes to write — less if they fit into a repeating pattern.

Once the storyboard is approved, the DOC specs are pulled down from the gallery and distributed to the authors. In the best case, in which the modules are independent and the design of the book frozen, all the authors work independently and in parallel. The author with the most DOCs is the "critical path."

Cutting Tactical Errors

The final stage is editing and revising for tactical errors — unclear and incorrect language that forces readers to "loop" on incomplete and ambiguous sentences — or even to break down entirely.

What the document needs at this stage is someone who knows how to convert a clumsy, difficult, badly written first draft into one that is clear.

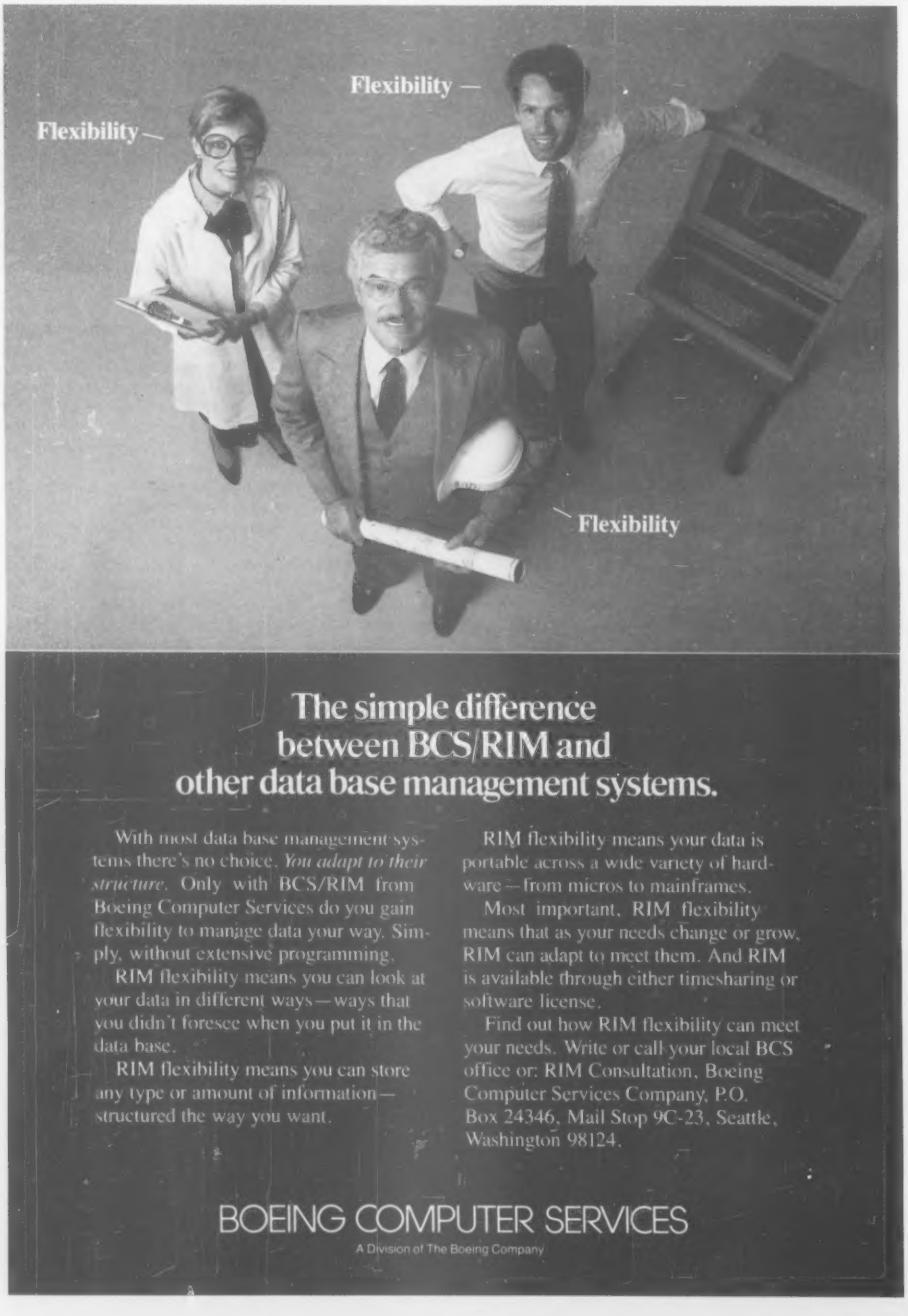
Most firms that use professional editors leave them hardly enough time to correct the mechanical errors of spelling and grammar in the first draft. Instead, they use all the review time to spot and correct technical errors. Ironically, though, clumsy writing masks technical errors; a manual must be written clearly so that the technical reviewers can find errors. Every organization that publishes unedited drafts issues material that is not only hard to read but technically inaccurate.

Almost any competent technical writer or editor can eliminate most of the bugs in a first draft. But most user documentation reaches its readers without a single glance from someone who knows the rules of English!

More than grammar, punctuation and spelling, the issue is usability: making the text easy to process and difficult to misunderstand.

Small things can make a big difference. The following should be avoided:

- Unnecessarily long words, like *utilize* for *use* and *initiate* for *start*.
- Vogue words and jargon, like *capability* and *environment*, which mean so many things to so many people that their precise meaning is all but lost.
- Long-winded phrases, like



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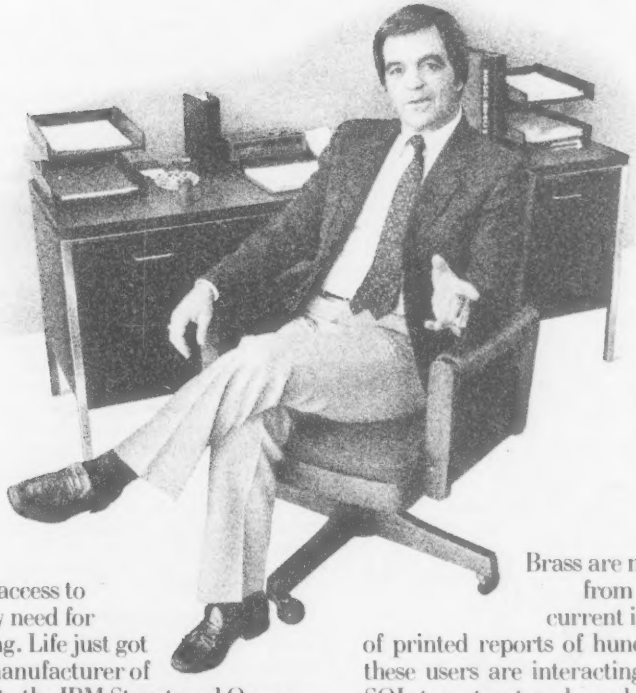

"SQL gives our users more of the right information when they need it. And in the most useful form."

Jim Whatley
Director of Data Processing
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User management at U.S. Brass now has quicker access to exactly the information they need for faster, better decision making. Life just got easier at the Dallas-based manufacturer of plumbing supplies. Thanks to the IBM Structured Query Language/Data System (SQL/DS)—a new IBM product and a whole new way of doing data processing.

One of the most powerful and easily used systems IBM has ever devised, SQL is an application development tool built around "relational" data-base techniques.

SQL lets U.S. Brass people extract items from the company's operating data base using any desired selection criteria. They can organize the items into any convenient sequence and format or structure.

One result, Whatley says, was the near-elimination of the backlog of one-time and "on-request" projects that once took 70 percent of the company's programming resources. And turnaround time for the users was cut from days to a few minutes.

"SQL has improved our reputation throughout the company," Whatley adds. "We use it all day long. It has eliminated 80 percent of the unplanned programming requests that were coming to us."

With a bit of tutoring at the terminal, manufacturing, marketing, and customer service professionals at U.S. Brass are now deriving vital information from sales history, open-order files, current inventory and the like. Instead of printed reports of hundreds or thousands of pages, these users are interacting with the data base through SQL to extract and condense exactly the current data they need.

SQL, which runs under DOS/VSE, is available at U.S. Brass on an IBM 4341. Along with end users, SQL also serves the company's professional programmers, who use it to apply the power of relational technology to production programs as well as on-request projects.

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BEFORE	AFTER
1. Ascertain whether there is sufficient paper to print the report.	1. Be sure there is enough paper to print the report.
2. Does this payroll package have a check printing capability?	2. Can this payroll package print checks?
3. Calculation of the expected profit and payback is accomplished in the TRND module of the program.	3. The TRND module calcuates the expected profit and payback.
4. Care should be exercised by operators that they may not press CLEAR DISPLAY when they mean to press INSERT CHARACTER.	4. When you mean to press INSERT CHARACTER be careful not to press CLEAR DISPLAY.
5. Press CONTROL and BK in the event that you want to backspace without erasing.	5. To backspace without erasing, press CONTROL and BK.
6. It is a requirement that user department managers initial the F-Spec to show their approval.	6. To show their approval, the user department managers must initial the F-Spec.
7. The project engineer possesses the data verification responsibility.	7. The project engineer should verify the data.

Figure 5. Some Edited Sentences

should it prove to be the case that instead of *if*, or *by means of the utilization of* instead of *with*.

• Smothered verbs, like *make a recommendation* instead of *recommend* or *effectuate a linkage* instead of *link*.

The most important tactical improvement is assuring that the parts of sentences are in the proper sequence. That is, in a well-made (edited) sentence, the main, emphasized material will generally appear at the end. That's right, at the end! Writing what the grammarian calls a periodic sentence — a sentence that saves its main material for last — allows the reader to read in a straight line. In contrast, the loose sentence — which blurts out its main content at the beginning — is generally harder to read and more likely to force the reader to read twice.

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BEFORE (Fog Index 21.6)

Following identification of needs and appropriate preliminary approval of all major system development project proposals, the Information Systems Department will prepare an analysis and recommendation for action. The more routine requests will be approved by concurrence of the Information Systems Department and of the functional area management without further review. Those requiring a change in policy, exceeding approved budgets or crossing organizational lines will require review and approval by the Steering Committee as well.

The Information Systems Department will evaluate the capability of the user or regional technical staff to implement a proposed system. Based on this evaluation, the responsibilities and authorities of the Information Systems Department, regional technical staff and the user will be outlined in a system development proposal submitted to the Steering Committee.

AFTER (Fog Index 11.4)

First, needs are identified and major development proposals get preliminary approval. Then, the Information Systems Department analyzes each request and recommends an action.

For small, routine requests, the Information Systems Department and the manager of the functional area may approve the project without further review. (A project is "routine" if it does not call for a change in policy, exceed current budgets or cross organization lines.)

For major requests, though, the Steering Committee must also approve. To advise them, the Information Systems Department submits its own evaluation, which proposes schedules and tasks for all the participants.

Figure 6. Passage Edited to Reduce Difficulty

The most succinct discussion of this basic point is in the famous *Elements of Style*, by William Strunk and E.B. White — a book that is apparently far more bought than read. Figure 5 shows the benefits of editing first-draft sentences.

Most of these changes make the sentences not only clearer but also easier to read. Even when the intended user is a computer professional or engineer, there is nothing to be gained by burdening him with unnecessarily difficult instructions. In Figure 6, the "before" version scores above the 21st grade reading level of difficulty on Robert Gunning's Fog Index. The "after" version is just over the 11th grade — without any loss of information or precision.

Documenter as Engineer

If documentation is a system and a manual is a program, then documenters are vulnerable to the same mistakes as analysts or programmers.

In 1979, Robert Perron made the following observation: "Without carrying the analogy to extremes, a comparison of programming in its early days to technical documentation in its present state yields some striking similarities" ["In Search of Disciplined Documentation," CW In Depth, Sept. 10, 1979]. What did Perron mean? I believe he meant that documenters — especially those who call themselves writers — have many of the same blind spots and bad habits that, in the 1960s, precipitated the conversion of programming from a secretive, individualistic art form into a branch of engineering.

Most of what ailed programming in the days before "structured methods" caught on still ails the fledgling documentation shop. For the most part, documenters still work alone, unable and unwilling to communicate what they do to other people. They still view themselves (and are viewed) as artists, with informal and eccentric methods that defy budgets and schedules. Like early programmers, they do not build models of their products, but wait until the first draft is done — much too late — for the first real tests and revisions.

Modern documenters have yet to learn the lesson of software economics: It costs more to maintain and modify documents than to develop them. That is, a cost-effective manual is not one that is produced cheaply. Rather, it is one that is economical to maintain and modify and does not cause expensive breakdowns in actual use. Indeed, a few hours spent testing the design of an operator's guide can save hundreds of hours in follow-up services and thousands of dollars in lost productivity.

One final note: The paradox of usability is that the more usable the system, the less need for user and operator manuals. Ironically, the greatest way for the documenter to enhance a system's usability is to suggest a change in the system itself that will reduce the need for user documents. Easy procedures need less explanation than difficult ones; modular programs are more easily depicted than "spaghetti" programs.

Most documenters will not get a chance to influence the systems and procedures they must write about; the systems' designs will constrain their manuals' usability. But some fortunate documenters will get to change the screens and procedures themselves, to make them "self-documenting." In that direction lies the ultimate usability.

About the Author

Edmond H. Weiss is an independent consultant, author and lecturer based in Cherry Hill, N.J. He regularly conducts a seminar on "Structured Documentation."

Weiss is the author of The Writing System for Engineers and Scientists *(Prentice-Hall, 1982) and* How to Document a Computer System, *which will be published by Prentice-Hall in early 1983.*

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Responsibility Shifting to DP Realm

Big Firms Up Micro Disk Use: Report

By Bob Johnson
CW New York Bureau

NEW YORK — Large organizations will be the single biggest users of microcomputer disk drives between now and 1986, and the procuring responsibility for these units is shifting more and more towards the DP department.

That is what was revealed in a recent interview here with Steven L. Ossad, author of a recent research report entitled *Microcomputer Disk Drive Industry*, which was released by the New York firm of Sanford C. Bernstein & Co., Inc.

The report said that because of a heavy proliferation of installed base microcomputer workstations in large companies and the need for extra storage capacity, nearly six million disk drive units will be shipped to these users by 1986.

Ossad said it is because of that fact that it is becoming increasingly important for the DP department to realize this kind of market growth is taking place. He said that whereas DP departments had earlier inhibitions about controlling and coordinating the purchase of personal computers, workstations and peripheral equipment for their users, fortunately, they are now realizing that becoming involved in this type of equipment purchasing decision is inevitable.

"Procurement is moving back to the DP department, and in light of our study on the microcomputer disk industry, this segment is one of major importance. In previous times, the DP department took a decentralized approach to users' computer equipment needs, but this is no longer the

(Continued on Page 56)

CDC Add-On Memory Increases Storage Capacity of IBM 3033s

MINNEAPOLIS — Control Data Corp. has announced the availability of add-on main memory to increase the maximum storage capacity of all IBM 3033 mainframe computers to 32M bytes of data.

This capacity is 8M bytes greater than the maximum storage currently available from IBM, CDC said.

The add-on memory reportedly employs 64K MOS memory chip technology and is totally compatible with the performance and functional characteristics of the IBM 3033 mainframe computers.

Maintenance of System

In addition to the third-party add-on memory, CDC offers maintenance of the entire IBM processor and memory system, thereby providing single-source maintenance responsibility, CDC said.

The price of the CDC main memory expansion is $21,500/1M byte to increase 3033 storage beyond 16M bytes of data.

CDC's Peripheral Systems Division is based at 2200 Berkshire Lane, Minneapolis, Minn. 55441.

Communicate Via Ethernet

Xerox CAD/CAM Systems Out

SANTA CLARA, Calif. — Two computer-aided design and manufacturing (CAD/CAM) systems said to communicate via the Ethernet local-area network have been announced by Xerox Corp. and its wholly owned subsidiary, Versatec, Inc.

The Expert 1000 and 2000 systems incorporate the Xerox 8000 network system, the Xerox 8010 professional workstation and the Ethernet local-area network. These systems, primarily designed for electrical and mechanical engineers, reportedly allow users to create, file, edit, print and distribute information electronically.

A minimum configuration for an Expert system would consist of two 8010 workstations with a 29M-byte disk drive each, Ethernet, Versatec electrostatic plotter, a magnetic tape drive unit, a file server with an 80M-byte disk drive and the software package. The price for this system would be about $180,000. Each additional workstation would cost about $35,000.

More information on the Expert 1000 and Expert 2000 is available from Versatec at 2805 Bowers Ave., Santa Clara, Calif. 95051.

Firm Depends on U.S. System To Develop Nigerian Capital

ABUJA, Nigeria — To help transform a desolate area of African bush country into Nigeria's new capital city, a German surveying company is relying on American computer systems.

In cooperation with Nigerian partners, Geodata, the surveying organization, has already completed more than 15 projects in Nigeria since 1978. These include basic geodetic work, topographic mapping and surveying for underground facilities.

"Geodata's corporate philosophy has been to augment the expertise of its staff with the latest in technological advances," said Horst Wurtzler, vice-president of the company. He said the company has been computer-oriented since its inception, and now it boasts graphics, interactive mapping and various calculation capabilities.

At the heart of Geodata's in-house data processing equipment is a Harris Corp. 300 superminicomputer system with 768K bytes of memory; a Harris S-125 computer with 512K bytes of memory; two 160M-byte and one 80M-byte disk drives; a host

(Continued on Page 58)

Eclipse S/20 Memory Up, Cost Cut

WESTBORO, Mass. — Data General Corp.'s Technical Products Business Unit has announced that the maximum memory available with its Eclipse S/20 computers has been raised from 512K bytes to 2M bytes, while the prices of the S/20 system with 256K bytes and 512K bytes have been slashed by 30%.

DG said the memory increase and price reductions are the results of high-density 64K-bit random-access memory (RAM) semiconductor technology, now incorporated into the systems.

The S/20 system, with 2M bytes of 64K-bit RAM memory and battery backup, is priced at $17,400. A fully configured system, including 1M byte of memory, a 25M-byte disk and diskette using DG's MP/AOS real-time, multiprocessing, multitasking operating system, costs $25,900.

DG is located at 4400 Computer Drive, Westboro, Mass. 01580.

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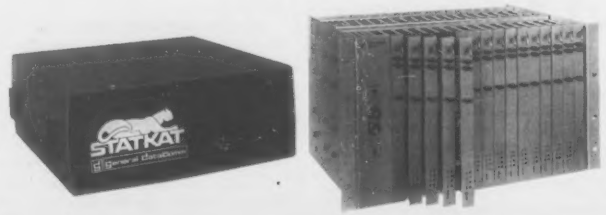

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Orange Co., Calif.	(714) 553-0782	Philadelphia	(215) 532-7440	Outside Florida	(800) 237-9863

Xerox Manufacturing System Targets IBM Users

NEW YORK — Xerox Computer Services (XCS) last week introduced the Xerox Manufacturing System for use with IBM mainframes.

The "advanced generation" product is a fully integrated software system which incorporates hardware and is capable of handling manufacturing, financial, distribution, marketing, engineering and procurement applications, the vendor said. XCS President Haig M. Bazoian added that the product is aimed at firms with annual sales between $15 million and $250 million.

The software reportedly operates on all IBM 4300, 3000 and 370 computers under DOS/VSE, SSX, OS/VS1 and MVS operating systems.

Scheduled for availability this month, the system will be offered to users either as a software package with 16 separate application modules priced between $15,000 and $35,000 each or as a time-sharing service.

It features data base tools, decision support systems and the incorporation of the Xerox Corp. 820-II personal computer for host communication or executive applications, according to XCS.

Bazoian said that he feels his company's new product fills a gap which up until now has been left open. In addition, he claimed that many manufacturers have been using a patchwork of different systems in an attempt to hold their business functions together.

The executive stressed that the XCS system does not merely interface between applications and systems, but fully links them together. "With the system in place, all of a manufacturer's operations are talking to one another. We have designed a single, unified architecture," he said.

Bazoian stated that his company is taking a new direction away from just being a time-sharing service and towards a "technological utility."

He said that XCS is part of a "new generation" of computer software and services companies which will offer users integrated applications and systems software, hardware, professional services and smooth integration of the personal computer with large systems. Additionally, he said that these new companies will offer full consulting and educational support.

Commenting on how he feels the manufacturing system will improve American productivity, Bazoian said, "We feel it's time for an advanced generation of manufacturing systems to improve American productivity. American manufacturing computer systems are getting old. About two-thirds of user software is over five years old and more than a third is 10 years old or beyond."

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NMA Seeks Name Change

SILVER SPRING, Md. — The National Micrographics Association (NMA) Board of Directors has unanimously recommended that its membership vote to change the association's name.

The proposed new name, Association for Information and Image Management, would be officially adopted July 1, pending membership approval. The new name is thought to express the organization's wider scope, according to the board.

Ballots will be mailed in February, and results will be tallied for the NMA's annual meeting, slated to take place in Philadelphia April 13.

Further details can be obtained from 9 Colesville Road, Silver Spring, Md. 20910.

Storage Unit Out For HEP Line Of Processors

AURORA, Colo. — Denelcor, Inc. has announced a mass storage subsystem for its heterogeneous element processor (HEP) line of scientific processors.

Offered as an add-on option, the subsystem was reportedly designed to provide large-volume, high data rate capabilities to the firm's HEP system, the vendor said.

The mass storage unit is field-expandable to allow the user to increase cache memory as well as boost the number of I/O channels and the amount of disk storage capacity. For instance, cache memory can be increased in 8M-byte increments to a maximum of 128M bytes. In addition, a total of 32 I/O channels are available, with each channel serving a disk storage module. The module consists of two 300M- or 600M-byte disk drives.

Finally, up to 9G bytes of disk storage can reportedly be attached to each mass storage subsystem, the vendor said.

The cost for the mass storage subsystem ranges from $450,000 for an 8M-byte configuration up to $3 million for a 128M-byte configuration. Information concerning the mass storage system can be obtained from Denlecor, headquartered at 17000 E. Ohio Place, Aurora, Colo. 80017.

Graphics Display System Boasts Flicker-Free Memory

NORTH BILLERICA, Mass. — Raster Technologies, Inc. has introduced its Model One/60 graphics display system, reportedly featuring a flicker-free refresh memory that is compatible with 13- to 19-in. monitors.

The Model One/60 has a 768 pixel by 576 pixel displayable resolution window on a 1024 by 1024 bit map. The displayable window can pan and zoom across the nonvisible memory, which can also be used to store text fonts and special symbols, according to the vendor. The display can simultaneously show up to 64 colors.

Prices for this system range from $11,000 to $18,500, depending on configuration, the vendor said from 9 Executive Park Drive, North Billerica, Mass. 01862.

Pen Plotters Announced

DENVER — Auto-trol Technology Corp. has announced two drafting pen plotters for users of its V77-800 system, its 32-bit Advanced Graphics Workstation and Digital Equipment Corp.'s VAX series of computers.

One drafting pen plotter has a maximum plotting area of 24.5 in. by 46.85 in., while the larger drafting pen plotter has a maximum plotting area of 36.5 in. by 46.85 in., the vendor said. Both can reportedly plot using wet ink, roller ball or fiber tip pen types. It can use as many as eight colored pens in one carousel, and pens are automatically capped when not in use, the vendor said.

These plotters start at $24,000, the vendor said from 12500 N. Washington St., Denver, Colo. 80233.

CAD/CAM Out on T/S

FOXBORO, Mass. — Engineering & Design Associates, Inc. (EDA) now offers the use of its computer-aided design and manufacturing (CAD/CAM) system to other high-tech design and manufacturing firms on a time-sharing basis.

EDA's Computervision M3100N Designer M Series CAD/CAM system includes software for both mechanical and electrical designs, according to the vendor. The system also reportedly performs complex engineering computations and analyses.

Costs are based on line charges and volume. Further details are available from EDA, which is located at 132 Central St., Foxboro, Mass. 02035.

Bar Code Wand Fits RS-232

MOUNTAIN VIEW, Calif. — Intertelephon U.S.A., Inc. has announced a bar code reader wand and decoder that can be used with a standard RS-232 port.

It uses existing LED, photosense and microprocessor-controlled algorithms, according to the vendor.

The wand costs $75, a spokesman said from 1185 Terra Bella Ave., Mountain View, Calif. 94043.

CAD/CAM Turnkey Unveiled

WOODLAND HILLS, Calif. — Vector General has recently entered the turnkey computer-aided design and manufacturing system (CAD/CAM) market with the introduction of a system that is said to combine the firm's display stations with its IBM-compatible mainframe computer as well as a wide range of storage and other peripheral devices.

The System 8000 will run either Cadam, Inc.'s Cadam software or Northrup Corp.'s N-Cad software or both concurrently, according to the vendor.

A 12-station system is being offered at $540,000 or $45,000/workstation. This configuration reportedly includes 4M bytes of active memory, 400M bytes of disk storage, a 1600 bit/in. magnetic tape drive, a 600 line/min. printer, three selector channels and an integrated communications controller, the vendor said.

Vector General is headquartered at 21300 Oxnard St., Woodland Hills, Calif. 91367.

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Anvil-4000 Fits DG MV 32-Bit Line

WESTBORO, Mass. — Manufacturing & Consulting Services, Inc. (MCS) of Irvine, Calif., and Data General Corp. here have announced that the MCS Anvil-4000 Mechanical/CAD/CAM software system is available from MCS on DG's MV family of 32-bit computers.

Anvil-4000 is an integrated system for mechanical design, drafting and manufacturing. Among its features are geometric construction and file management.

The base package costs $31,000; with drafting package, $46,000; with numerical control, $57,000; or with extended geometry, $59,000 from MCS at 17942 Cowan, Irvine, Calif. 92714.

Graphics Terminal Out

ITHACA, N.Y. — Ithaca Intersystems, Inc. has announced Graphos, a desktop color graphics terminal for computer-aided design and manufacturing applications.

The unit can accommodate up to 16 windows and features 640 pixel by 480 pixel resolution, individual scroll, pan and zoom for each window, segment retention without retransmission, two-dimensional segment transformations, high-level primitives and an optional nine-slot S-100 motherboard.

Graphos is available with most commonly used protocols and costs about $8,000, the vendor said from 1650 Hanshaw Road, Ithaca, N.Y. 14850.

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☐ A full range of controllers emulate IBM 3274 local and remote systems using either BSC or SNA communications.
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Disk Drives Researched

(Continued from Page 53)

case," he said.

According to Ossad's study, by the end of 1986, the installed base of microcomputer workstations will reach seven million in large organizations and government combined. And, given the "memory-intensive" application needs generated by this much hardware and the steep decline in prices in the unit cost of memory, the report predicted auxiliary memory capacity per system to rise sharply.

Increased System Capacity

"Our forecast calls for the average system to contain about 7M bytes of capacity by 1986 vs. about 2.5M bytes currently," the study said.

Ossad pointed out that corporate DP departments for the most part will not necessarily be concerned with the entire microcomputer disk drive market that his study reflects, but more with the 8-in. floppy disk that is better geared toward hardware for large company applications.

However, he said that the overall study reflects the growing need for DPers to be aware of the impact user areas will have on DP as a whole, especially in the memory market.

"We expect only a modest shift to 5¼-in. floppies from the 8-in. designs. The inertia here will reflect vendor concern for maintaining compatibility between different generations of equipment and the recent advances in reducing the physical size of 8-in. floppies," the study said.

The report is available for $600 from Bernstein & Co., 767 5th Ave., New York, N.Y. 10153.

D/A Board Out for Intel

MANSFIELD, Mass. — Datel-Intersil, Inc. has introduced an eight-channel, 16-bit resolution multibus digital/analog (D/A) board.

The ST-716 16-bit D/A boards are form- and fit-compatible with Intel Corp. Multibus-based computers and were designed to slide directly into the host computer's card cage, according to a vendor spokesman.

In addition, they are memory-mapped for easy software control and provide standard output ranges to simplify interfacing with industrial controls and instrumentation equipment, the vendor spokesman maintained.

The ST-716 is compatible with both 8- and 16-bit Multibus-based systems and supports 20-bit addressing, the spokesman said. The ST-716 bus input registers are double buffered. This reportedly enables each channel to be loaded with all 16 bits in parallel (16-bit systems) or in two consecutive 8-bit bytes (8-bit systems).

The ST-716-A with four D/A channels is priced at $690. The ST-716-B, with eight D/A channels is $995, and the ST-716-C with four D/A channels with ac and dc converter is $745, according to the vendor spokesman.

Datel-Intersil may be reached at 11 Cabot Blvd., Mansfield, Mass. 02048.

TM990 Gets Controller, Memory Aid

DALLAS — A floppy disk controller and two memory-expansion modules have been added to Texas Instruments, Inc.'s TM990 family of single-board, 16-bit microcomputers.

The TM990/303B controller reportedly enables a TM990 CPU board to control up to four 8½-in. or three 5¼-in. floppy disk drives. It supports 20-bit host-memory addressing and stores and retrieves data via high-speed direct memory access transfers, the vendor said. The controller is priced at $1,250.

The TM990/202 is a user-configurable memory board for TM990-based 16-bit CPUs. The board features two banks of eight sockets each, and can include various combinations of static random-access memory (RAM).

Prices for this product start at $520.

The third board is the TM990/203A, a memory-expansion product that utilizes TMS4164 64K-byte RAM. It is available in 128K- and 256K-byte versions.

Prices for the TM990/203A start at $1,400.

TI can be reached through P.O. Box 202129, Dallas, Texas 75220.

Robotic Disk Handler Out

TUSTIN, Calif. — Applied Data Communications, Inc. has announced the Robotic Disk Handler, an automated disk loading and unloading device.

Based on a Zilog, Inc. Z80A microprocessor, the unit can handle up to 100 floppy diskettes. It can operate with either 5¼- or 8-in. diskettes.

The unit costs from $5,995, the vendor said from 14272 Chambers Road, Tustin, Calif. 92680.

DG Viking, CRS-55 Get Printers

MINNEAPOLIS — Control Data Corp. has announced two daisywheel desktop printers for its Viking 721 and 722 display terminals and the CRS-55 remote entry system.

The devices are all compatible with the firm's high-end Cyber 700 and 800 series mainframes.

The 727-40 daisywheel printer can operate at 40 char./sec. The 727-55 can operate at 55 char./sec. Both models can print from 132- to 163 char./line at 10 to 12 char./in. The printers were designed for an office environment and operate at a noise level of about 65 db, the vendor said.

The 727-40 costs $2,150 and leases for $90/mo plus a $45/mo maintenance fee on a on a one-year agreement. The 727-55 costs $2,895 and leases for $121/mo plus $49/mo on a one-year contract, according to the vendor.

CDC can be reached through P.O. Box O, Minneapolis, Minn. 55440.

GE 2120 printers reduce time-sharing costs.

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GENERAL ELECTRIC

Onyx Unveils Micro-Based Units

SAN JOSE, Calif. — Onyx Systems, Inc. has introduced three microprocessor-based systems that are said to support up to 11 users.

The systems join the firm's existing line of 8- and 16-bit systems.

Sundance 16 is an integrated computer/workstation that is available in two different models: the VT100-type with 132 columns and one with 80 columns. Both use 16-bit processors, 5¼-in. Winchester drives with 7M, 14M or 21M bytes of storage, 256K to 512K bytes of memory and a 12M-byte tape backup. Retail prices for the systems start at $12,990.

The C5002A is a 16-bit machine with a 5¼-in. internal Winchester disk with 7M, 14M or 21M-byte storage capacity, 256K or 512K random-access memory (RAM) and 12M-byte tape backup. This product is priced from $10,990.

Finally, the C8002A is a Bell Laboratories' Unix-based 16-bit machine with an 8-in. internal Winchester disk with 20M, 40M or 60M-byte storage, with the same amount of RAM and backup as the C5002A.

Retail prices for the C8002A start at $13,990.

Further details are available from the vendor at 25 E. Trimble Road, San Jose, Calif. 95131.

Micros Get Hard Disk Tools

CAMPBELL, Calif. — A series of hard disk subsystem products for microcomputers has been unveiled by Santa Clara Systems, Inc. (SCS).

The SCS Mini-Mega Fixed Removable products feature 5M bytes of storage capacity on a 3.9-in. removable Winchester cartridge along with a 5¼-in. fixed disk capacity of 5M, 10M or 15M bytes.

The system interfaces to several microcomputers, including the Apple Computer, Inc. Apple II and III, IBM's Personal Computer, the Radio Shack TRS-80 series and Motorola, Inc.'s 6800. Pricing on the subsystems ranges from $2,895 to $5,056.

SCS is based at 560 Division St., Campbell, Calif. 95008.

Systems Help Transform Nigerian Bush Into City

(Continued from Page 53)

of Harris peripherals; Tektronix, Inc. 4014 and 4010 graphics terminals and a collection of other interactive alphanumeric terminals.

The combination of computer mapping software with interactive hardware and peripherals is extremely effective, Wurtzler said. The rapid data transfer rates of the Harris systems allow Geodata to manipulate interactively models on the graphics screens and plotters. Since so much of Geodata's work is based on geographic coordinates, large volumes of data must be processed and plotted.

Geodata's computers provide the connecting link between other equipment, such as a Xynetics 1100 automated drafting system, four digitizing tables, a Carl Zeiss Planicomp C-100 analytical plotter and a digitally controlled Wild Aviophot OR-1 orthophoto projector.

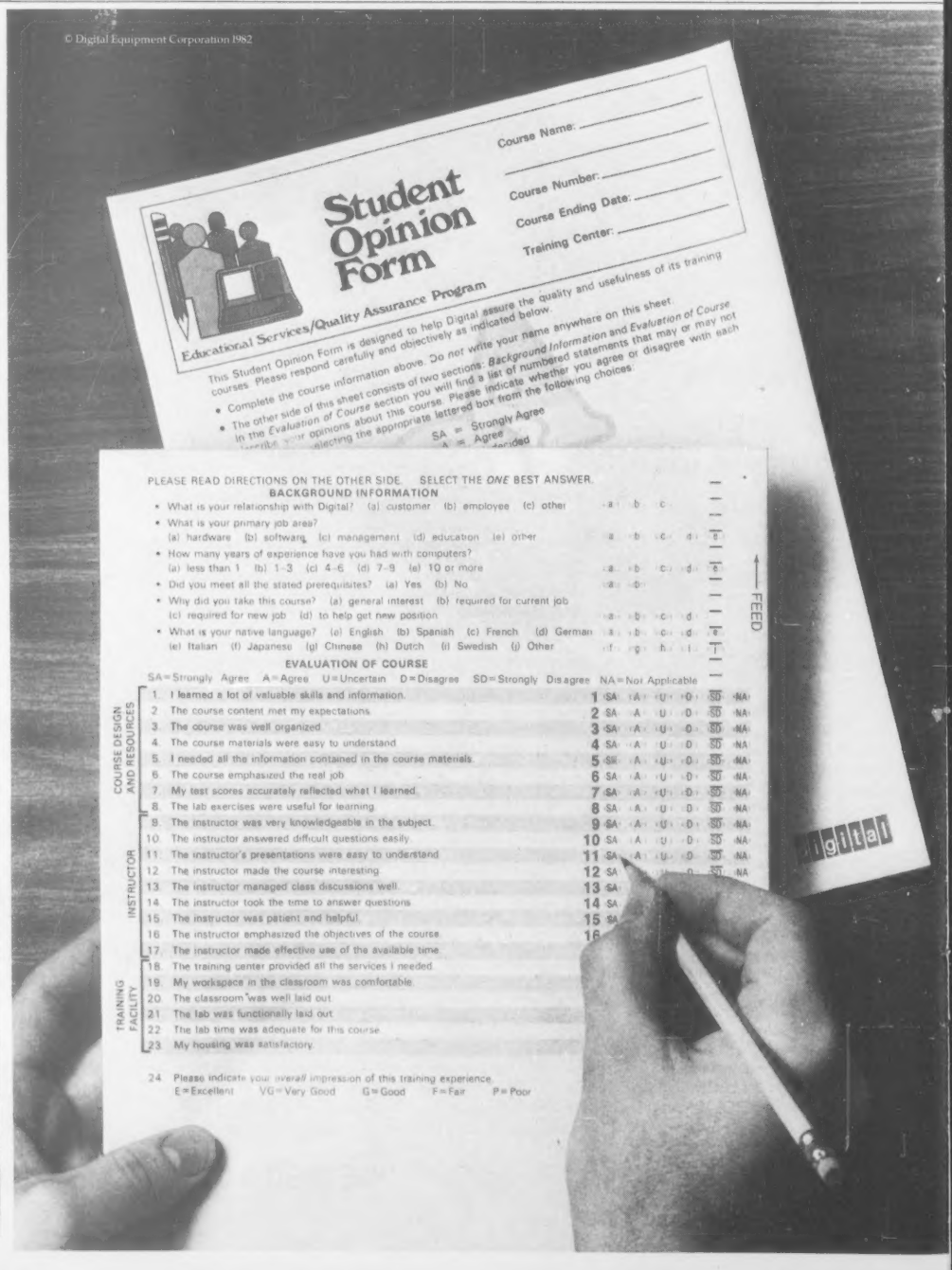
The largest project Geodata has undertaken in Nigeria was a triangulation network covering the whole Federal Capital Territory of more than 10,000 square kilometers. This program has been underway for three years and is nearly complete.

Another project involves the design and staking out of waterworks for the new city, which will house approximately 250,000 people in 5,000 to 10,000 homes. This project also includes the management of mapping and storing the data on the underground services, such as water supply and other utilities. Without Geodata's digital mapping system, such an undertaking would be quite impractical, Wurtzler maintained.

"In the past two years, we have produced about 2,000 map sheets for development programs in Nigeria. I don't know of any other company that has produced so many map sheets in such a short time. This has been possible only due to the versatility of our computers and the availability of software. Otherwise, it would have required an army of draftsmen and photographers," Wurtzler said.

Extensive in-house software development is another function of the Harris 300 and S-125 computers, according to Geodata's DP manager Bernard Eggert. "We have developed sophisticated programs for surveying and land use, as well as interesting data base management, storage and information systems," he explained.

"Since we are probably digitizing more mapping data than anyone in Europe," Eggert continued, "we needed to find a more advanced method to deal with the digitized data. We devised our own benchmark test to help us decide which computer was right for us. We also discovered the Harris machine was able to run a large Fortran program, with 7,500 Fortran statements, in just one day. This was an important factor," Eggert concluded.



Boasts Job Costing, Payroll Applications

Data Collection, Control System Unveiled

SANTA CLARA, Calif. — Star Computer has unveiled a data collection and control system that can be used for job costing, payroll management, labor distribution and time accounting applications.

The Trans-Action systems are programmable, intelligent, microcomputer-controlled devices designed to capture data at the point of origin, store the information in memory and transmit the data to another station or host computer. The units have a 24-char. display and transmit to a variety of computers. Transmissions occur at speeds up to 9,600 bit/sec, a spokesman said.

The systems can provide for either on-line or periodic batch transmission to the computer for data processing. Stations connected with the systems can reportedly automate and control security functions, turn on heat or lighting, control certain activities or lock and unlock specific doors.

Star Computer's Trans-Action

The Trans-Action systems can include a 22-char. Hollerith badge reader, a magnetic stripe card reader, an 80-col. keypunched card reader or a bar code or optical character recognition wand scanner, a spokesman noted.

All data inputs are validated by programmed checks and edits in the stations. In addition, printouts of various conditions can be obtained at user-specific times, the vendor said.

The systems are priced at $1,995 each, with discounts available for large quantity purchases from the firm at 3080 Olcott St., Santa Clara, Calif. 95051.

Workstation Debuts; Features Color Graphics

NORCROSS, Ga. — Intelligent Systems Corp. has announced a color graphics workstation.

The Executive Presentation System (EPS) provides all the hardware and software users need to prepare presentation-quality, color graphics visuals including overhead projector transparencies, 35mm slides and paper prints and plots, the vendor said.

The EPS interactive graphics language reportedly allows users to create, modify, store and retrieve color graphs and charts; generate arcs, polygon fills, bars, zoom rotate and pan; choose from seven type fonts; write application programs without programming training; and build libraries of applications.

Priced between $18,000 and $30,000, the EPS is available from the vendor at 225 Technology Park/Atlanta, Norcross, Ga. 30092.

HP Laser Printer Gains Capability

PALO ALTO, Calif. — Hewlett-Packard Co. has announced its HP 2680A laser printer can now print on pressure-sensitive labels.

With the capability, users can extract information from their data bases and print labels to suit their needs. The unit can print labels that meet the requirements for various label formats including OCR-A. Labels can be ordered from various suppliers. Material requirements are defined in a specification list provided by HP.

Hardware that enables the HP 2680A laser printer to print labels is provided on new models at no extra charge. Current users can purchase a field upgrade kit for $500, HP said from 3000 Hanover St., Palo Alto, Calif. 94304.

Printer Buffers Introduced

CONCORD, Calif. — Renaissance Technology Corp. has announced a new series of printer buffers said to be compatible with a number of printers on the market.

Buff-et high-speed printer buffer reportedly can store up to 65,000 char. or about 30 average printed pages. The copy feature allows multiple copies of a document without having to resend it from the computer, the vendor claimed.

Power for the product can be taken from the printer power supply or from a common ac adapter. Buffer size is available in 16K, 32K or 64K bytes, according to the vendor. It can be purchased in both parallel and serial versions. A personal computer version contains all the cabling necessary to go directly between an IBM Personal Computer and a parallel printer.

This product ranges in price from $219 to $329, a spokesman said. Renaissance Technology is located at 1070 Shary Circle, Concord, Calif. 94518.

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Data General

Business System Emulates Intel's 8085 Microprocessor

NEWBURY PARK, Calif. — Voyager Systems, Inc. has announced the Voyager 4000, a small business system based on the Intel Corp. 8085 microprocessor.

The system comes with bundled software including Digital Research, Inc.'s CP/M operating system and word processing, spreadsheet with graphics, data base management, mailing list, payroll and executive time management packages.

A basic system combines two 5¼-in. double-sided, double-density floppy disk drives for a total of 1.2M bytes of disk storage and 64K bytes of main memory. The unit can be upgraded to an Intel 8086 microprocessor, and an 8/16-bit co-processor is available with 1K bytes of random-access memory, the vendor said.

A basic system costs about $5,000, the vendor said from 2192 Anchor Court, Newbury Park, Calif. 91320.

DEC-Compatible Microsystem Out

NATICK, Mass. — Charles River Data Systems, Inc. has announced a Digital Equipment Corp.-compatible microsystem said to allow users to build a complete LSI-11 system, including processor, 256K bytes of memory and two disk drives.

The RLX1001B incorporates a 10.3M-byte, 5¼-in. Winchester disk; a 1M-byte, 8-in. floppy disk; a built-in DEC Q-bus card cage with 8-quad height slots and a 7-in.-high desktop or rack-mountable enclosure.

The RLX1001B costs $7500; With LSI-11/23 processor, 256K-byte memory and serial interface, it costs $9995 from the vendor at 4 Tech Circle, Natick, Mass. 01760.

Fits IBM, Apple Micros

Tape Drive Series Released

SAN DIEGO — A series of ½-in. magnetic tape drives and intelligent controllers has been introduced here by Innovative Data Technology.

The Series 1012 Magnetic Tape Subsystem family of products was designed for use with IBM's Personal Computer, Apple Computer, Inc.'s Apple II and III, Commodore Business Machines, Inc.'s Pet and various other microcomputers, the vendor said. The subsystem reportedly provides personal and small business computers with the capability to read or write ½-in., nine-track magnetic tape.

The subsystem, which includes tape transport, formatter, intelligent controller, coupler, manuals, cabling and software, is priced at $6,995.

The vendor can be reached at 4060 Morena Blvd., San Diego, Calif. 92117.

OMR-2000 Gets Commodore Tie

CHATSWORTH, Calif. — Chatsworth Data Corp. has announced that its OMR-2000 optical card reader can now be attached to the parallel user port on Commodore Business Machines, Inc.'s microcomputers.

The OMR-2000 is an automatic card feed reader that can scan cards containing marks, punched or preprinted data, the vendor said.

The unit, including the new interface, costs $1,675, the vendor said from 20710 Lassen St., Chatsworth, Calif. 91311.

Matrix Printer Targets Minis

FORT LAUDERDALE, Fla. — Southern Systems, Inc. has announced a 140 char./sec printer system with a plotting format option.

The M-100 matrix printer offers output at 56 line/min when printing 132 char./line and 145 line/min when printing 40 char./line, the vendor said. The system reportedly is compatible with most minicomputers, including those from Digital Equipment Corp., Data General Corp., Perkin-Elmer Corp. and Burroughs Corp.

The system is ideal for bar codes, graphics, programmable character generator and block letters, according to the vendor. It costs $3,595, the vendor said from 2841 Cypress Creek Road, Fort Lauderdale, Fla. 33309.

Disk Drive Fits S-100 Computers

NATICK, Mass. — Alloy Computer Products, Inc. has announced an 8-in., 45M-byte Winchester disk drive designed for S-100 computers.

Micromate features a built-in 13.4M-byte cartridge for backup. Both disk and cartridge drives are driven by a single power supply. The other major system component is the interface linking the drives to an S-100 computer.

The system is said to provide high-speed, file-oriented disk-cartridge transfers at a rate of .5M byte/sec. Micromate uses Micropolis Corp.'s Model 1223 disk drive and costs $5,495 from Alloy Computer at 12 Mercer Road, Natick, Mass. 01760.

DATA COMMUNICATIONS NETWORKS

THE LONG AND SHORT HAUL

Computerworld's January 31st Special Report on Data Communications Networks will give you a communications roadmap.

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- Combining private and public switch data networks
- Designing and using national multi-user and multi-function networks
- Network management technologies and how they have evolved
- Teleprocessing system performance
- Telecommunications and DP managers

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If data communications are affecting – or beginning to affect – what you do, then you can't afford to miss this Special Report.

And if you sell network products, here's where you'll find your best prospects on January 31st – reading *Computerworld's* Special Report on Data Communications Networks. Your ad in this issue will insure them more complete information on the products in the field. Ad close for this Special Report is January 14th.

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System Brings Direct Mail Ability To Ecom Service

STERLING HEIGHTS, Mich. — D.L. Hiller & Associates has unveiled an electronic mail software system said to provide direct-mail capability to the U.S. Postal Service (USPS) Electronic Computer-Originated Mail (Ecom) service.

Ecom is the USPS service that accepts single-address letters and form letters for distribution electronically. Ecom users enter their correspondence and direct-mail letters into their word processors and/or computers. They can transmit their mail to USPS Ecom computers, where the letters are printed and delivered within one to two days.

The Electronic Postman package makes such communication of mail from computers possible. It generates and transmits the mail for Ecom users, resulting in secretarial and clerical labor savings of 40% to 55% over conventional mailing approaches, the vendor claimed.

The package can operate on most personal computers, minicomputers and mainframes that are equipped with word processing capabilities. It has been certified by USPS.

Turnkey hardware and software systems start at $6,000 for small business use and increase in cost with larger systems. Software-only versions are $1,695, and a demonstration version with documentation costs $95, D.L. Hiller said from 14536 Island Drive, Sterling Heights, Mich. 48078.

Planet Token Ring Series Unveiled by Racal-Milgo

MIAMI — Racal-Milgo, Inc. has unveiled a local-area network product line running over coaxial cable in a "twin ring."

The Planet Token Ring series can be configured to meet a variety of applications. It permits full- or half-duplex communications and accommodates communicating devices from different vendors, regardless of protocol, Racal-Milgo claimed. It is said to be particularly suitable for an office or factory complex where multiple independent systems must operate in a totally protocol-transparent environment, according to a spokesman for the firm.

Each Planet Token Ring series can accommodate up to 500 communicating devices such as word processors, terminals and other DP equipment. The communications link is controlled by the Planet Director, a compact, desktop intelligent network processor. Systems interface is provided by Terminal Access Points (TAP).

Network of TAPS

A network of up to 250 TAPs can be monitored and controlled by one director. Each TAP has two RS-232 ports that can operate synchronously, asynchronously or mixed at speeds to 19.2K bit/sec. A TAP can be attached at any Cable Access Point (CAP) along the cable length, allowing communications devices to be plugged in like ordinary electrical appliances, the vendor said.

Planet can support any combination of conventional circuit plans — point-to-point, multidrop or broadcast — in a permanent or switched mode, working simultaneously, the vendor claimed. Dedicated and switched circuits can reportedly be established by a few English-language commands.

Virtually any terminal workstation or other communicating device can be connected to any other compatible device or group of devices. Network expansion is accomplished by adding more TAPs. Additional CAPs can also be installed at any time, anywhere along the cable, without interrupting the flow of communications, the vendor noted.

A fail-safe mechanism reconfigures the Planet, bypasses the problem and reestablishes the communications link automatically in the event of a cable fault. In addition, the system features diagnostic aids, network control features and a range of management capabilities.

Each director costs $9,450 and each TAP costs $2,250. They also lease on a 36-mo agreement for $342 and $82/mo, respectively. Racal-Milgo can be reached at 8600 N.W. 41st St., P.O. Box 520399, Miami, Fla. 33152.

Honeywell CPUs Get Micro Facility

PHOENIX — Honeywell, Inc. has introduced a personal computing facility for its mainframes that was designed to automate various office functions.

The software package is also said to be a productivity aid in forms creation.

The facility is a screen-oriented subsystem of Honeywell's time-sharing system that operates on the vendor's 66/DPS or DPS/8 mainframe running Gcos or Gcos 8.

The package allows users to automate their office procedures without the assistance of a professional data processing staff, a vendor spokesman said. It was designed to create forms on a CRT screen as a basis for interactive problem solving or report generation.

The package supports Honeywell's VIP 7700/7800 family of terminals and is available for a monthly license fee of $170 with a minimum term of 12 months. Honeywell can be reached through P.O. Box 6000/T-60, Phoenix, Ariz. 85005.

Multivendor WP Tool Released

KING OF PRUSSIA, Pa. — Integrated Technologies, Inc. has announced a distributed software product that reportedly provides multivendor word processor compatibility.

Soft-Switch enables word processors of different types to share documents without sacrificing the ability to edit the documents, the vendor said. Documents created on one brand of word processor that are used by another are first converted to Soft-Switch's own proprietary canonical form and then translated into the proper form for the recipient processor. All format codes are preserved and the document can be edited or printed immediately upon receipt without the need to perform document cleanup, according to the vendor.

Current Soft-Switch interfaces are available for the IBM Displaywriter, IBM OS6, IBM 6640 and 6670, Wang Laboratories, Inc. OIS, VS and WPS systems. The cost for the mainframe software is $15,000 and each interface is $3,000.

The firm is located at Suite 414, 200 N. Warner Road, King of Prussia, Pa. 19406.

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DEC Offers Four Packages For VAX-11/750, /780 Users

MAYNARD, Mass. — Digital Equipment Corp. has introduced four software packages that are said to offer users of VAX-11/750 and VAX-11/780 minicomputers efficient on-line storage.

The packages are based on two of DEC's recently introduced disk products, the RA8 fixed medium disk drive and the RA60 removable disk drive.

The disk subsystems are part of DEC's All-In-One office systems and give improved on-line storage for typical office applications that involve multiuser work loads, large numbers of records and high levels of use for electronic mail, a vendor spokesman said.

Prices for the four packages range from $168,300 to $318,600, DEC said from Maynard, Mass. 01754.

Daisywheel Printer Boasts 55 Char./Sec

STAMFORD, Conn. — Digital Associates Corp. has introduced a daisywheel printer that reportedly prints at 55 char./sec and has a mean time before failure of 3,000 hours.

The DP-55 features 100 font styles in both plastic and metal printwheels, column/status display and universal power display. It also features an expandable programmable memory, a vendor spokesman said.

Optional features reportedly include cut-sheet feeder, tractor-feed paper and bottom-feed paper slot. Compatibility with IBM, Digital Equipment Corp., Data General Corp. and other major computers is available.

The printer ranges in price from $2,000 to $2,500 and is available from Digital Associates Corp., 1039 E. Main St., Stamford, Conn. 06902.

TO-5000 Gets Underscore Feature

NORTHRIDGE, Calif. — An underscore recognition capability has been announced Mitsui/Totec U.S.A. for use with a Mitsui/Totec TO-5000 optical character recognition (OCR) system.

With this feature, reportedly both single-word and continuously underscored information can be scanned, digitized, then automatically transferred to a WP/DP system.

The TO-5000 is a desktop, multifont OCR system that is capable of reading as many as six type fonts without manual interchange. Its high-speed throughput capacity reportedly allows 300 pages to be read per hour.

The standard configuration is available for $13,990. The vendor is located at 19151 Parhenia Ave. "A", Northridge, Calif. 91324.

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Sony Announces Compact Printer

NEW YORK — Sony Office Products, a division of Sony Corp. of America, has introduced a companion compact printer to its Typecorder Portable Office System. When used in combination, the two units produce hard copy at home in the office or on the road, the vendor claimed.

The Sony Compact Printer Model OA-P1110 weighs five lb, 12 oz and accepts standard 8½-by-11 in. paper. It prints at 17 char./sec on plain paper. The characters are made from a 24-by-32 dot matrix and the user can select a 10- or 12-char./in. pitch.

The printer is available for $825 from Sony Office Products, 9 W. 57th St., New York, N.Y. 10019.

Micromation Adds WP System

SAN FRANCISCO — A small business word processing system was announced by Micromation, Inc.

Miword allows a multifunctional workstation to perform word and data processing, telecommunications and other information management tasks. Users can create, edit, print and file documents with a full range of formatting capabilities, the vendor said. Miword has self-explanatory function keys and a fully operational cursor movement keypad.

The system can be purchased as part of a Micromation business computer system or can be added to Micromation systems already in use. Priced at $595, Miword is available from the vendor at 1620 Montgomery St., San Francisco, Calif. 94111.

'He's on Sick Leave. He Has Memory Dump...er.. Amnesia.'

To Benefit Both Firms

IBM Buy-In of Intel Called Industry Coup

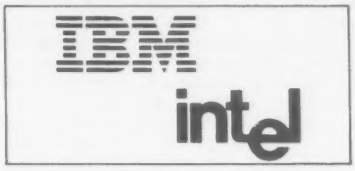
By Bill Laberis
CW Staff

IBM's proposed acquisition of 12% of Intel Corp. is, in the words of one industry analyst, "great for IBM, great for Intel and bad for the Japanese."

Moreover, industry observers said, the intended acquisition may send other American semiconductor manufacturers seeking similar financial arrangements with big computer makers in order to secure research and development funds and remain competitive.

Announced Dec. 22, the IBM-Intel agreement calls for IBM to purchase 6.25 million new shares of Intel stock for $40 per share, or $250 million total. Analysts said this price is anywhere from 10% to 20% more than Intel would have garnered via a public stock offering.

"I wouldn't exactly call it a subsidy, but that offering would not have made $40 on the open market, not with the way things



are for the semiconductor makers," said Mike J. Geran, industry analyst at E.F. Hutton & Co., Inc. in New York.

Geran said the deal is a sweet one for IBM in that "Intel is the technology leader in the products IBM is most interested in."

Intel, meanwhile, will become the beneficiary of twice the amount of money it laid out for capital expenditures during all of 1982, Geran noted, "easing a recession-induced cash flow problem that has really socked the semi manufacturers."

"Intel needs this kind of support to compete with the Japanese," Geran said. "It will be interesting to see how its American competitors will react."

Additionally as per the agreement, IBM will limit any future Intel stock purchases to 30% of the total outstanding. This future purchase option, coupled with the ownership of over one-third of Intel's stock by company employees, should all but negate the possibility of an unfriendly takeover of Intel.

The agreement also provides for the election to Intel's 11-member board of an IBM nominee, who will be excused from deliberations in which there is a potential conflict of interest, IBM and Intel have said.

The agreement and minority purchase must be approved by federal regulatory agencies. Approval, analysts said, is virtually assured both by the restrictive language of the agreement and the conclusion last year of the government's antitrust suit against IBM.

The end of that long suit "removed one potential obstacle in the path of this sort of

(Continued on Page 66)

Supreme Court Decision Seen As Win for Software Houses

By Paul Gillin
CW Staff

WASHINGTON, D.C. — In a move hailed as a victory for software developers, the U.S. Supreme Court has refused to review a ruling by the Wisconsin Supreme Court that found the accounting firm of Arthur Young & Co. guilty of stealing trade secrets from M. Bryce Associates, Inc., a Cincinnati-based information processing firm.

Bryce's suit charged that the accounting firm had published information supplied by Bryce during a demonstration of a management information system (MIS) methodology in 1974. Bryce argued that the information was protected by state trade-secret laws, even though some of the documentation carried a copyright notice. Copyright law protects the form but not the underlying ideas of a work, while trade-secret laws protect the concepts.

Lawyers for Arthur Young argued that Bryce had forfeited its trade-secret protection by placing a federal copyright notice on the materials. The firm argued it was illegal for Bryce to seek protection under both copyright and trade-secret laws. Arthur Young also contended that Bryce's methodology was publicly available and, as such, did not constitute a trade secret.

The $10,000 suit was filed in a Wisconsin circuit court in 1974 and attracted considerable attention from software developers and parties concerned about

(Continued on Page 68)

Called Father of Silicon Valley

Ex-Stanford's Terman Dead at 82

Fred E. Terman

By Robert Batt
CW West Coast Bureau

PALO ALTO, Calif. — Frederick Emmons Terman, former provost at Stanford University and a man often called the "Father of Silicon Valley," has died at the age of 82.

Terman, who succumbed to a heart attack during the holiday season, is best remembered for his role as a driving force in the development of the electronics industry on the West Coast.

Among his students were David Packard and William Hewlett, co-founders of the Hewlett Packard Co., and Edward Ginzton, chairman of Varian Associates.

Terman had a profound influence on

(Continued on Page 70)

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OA Budgets to Increase Just 20% This Year: IDC

FRAMINGHAM, Mass. — Although users will spend more on office automation this year compared to last year, the rate of increase in spending will drop significantly, reflecting recessionary pressures, according to a report released by International Data Corp. (IDC).

"User Spending in Office Automation" predicts an increase in office automation budgets for 1982-1983 of 20%, compared to a 56% increase the previous accounting year.

The report is based on the results of both a mail questionnaire survey and a series of interviews with companies in both the public and private sector.

As expected, hardware was by far the largest budget item, accounting for at least half of office automation budgets, according to the report.

Also, an overwhelming majority of respondents indicated that office automation responsibility was located within the data processing or management information services department, with larger organizations more prone to allocate responsibility in this manner, the IDC report said.

Less than half the organizations sampled indicated they had a comprehensive office automation plan, and there seemed to be no correlation between overall size of the organization and the presence of such a plan, IDC said.

The report is available for $3,500 from IDC, 5 Speen St., Framingham, Mass. 01701.

Intel Acquisition Seen Sweet for IBM, Intel

(Continued from Page 65)

agreement," according to Harry Edelson, vice-president of research at the First Boston Corp. On the contrary, federal regulators may look upon the deal between two American companies as being in the best national interest, given the industry threat posed by the Japanese, Edelson said.

"It assures IBM a U.S. rather than a Japanese supplier (of semiconductors), which is good for IBM when you consider the Japanese may end up being IBM's biggest competitor," Edelson said.

John R. Opel, president and chief executive officer of IBM, said his company will not participate in the day-to-day operations of Intel and that IBM will "continue making significant (semiconductor) purchases from other manufacturers, as well as Intel."

Dr. Gordon E. Moore, chairman and chief executive officer of Intel, said, "We welcome IBM's investment. It will permit Intel to continue the investment in research and development and production capacity necessary to retain leadership in microelectronics."

Just a week before the agreement was announced, Intel had released an official statement denying that the company had engaged in merger and acquisition talks with IBM, despite persistent rumors to the contrary. The agreement also followed by a few weeks an announcement that Intel would cut by up to 10% the wages of many of its 16,000 workers worldwide, an austerity move designed to fight the anemic profits that have plagued the semiconductor industry.

Last September, Intel forged an agreement to provide IBM with all circuitry, masks and process technology for the 64K-byte Intel 2164A random-access memory chip. Intel also supplies the microprocessors for IBM's Personal Computer, Displaywriter word processor and Datamaster small business computer.

Acknowledged by many observers as a technology leader, Intel has been rocked for the past two years by a combination of the recession and fierce price competition initiated by the Japanese manufacturers.

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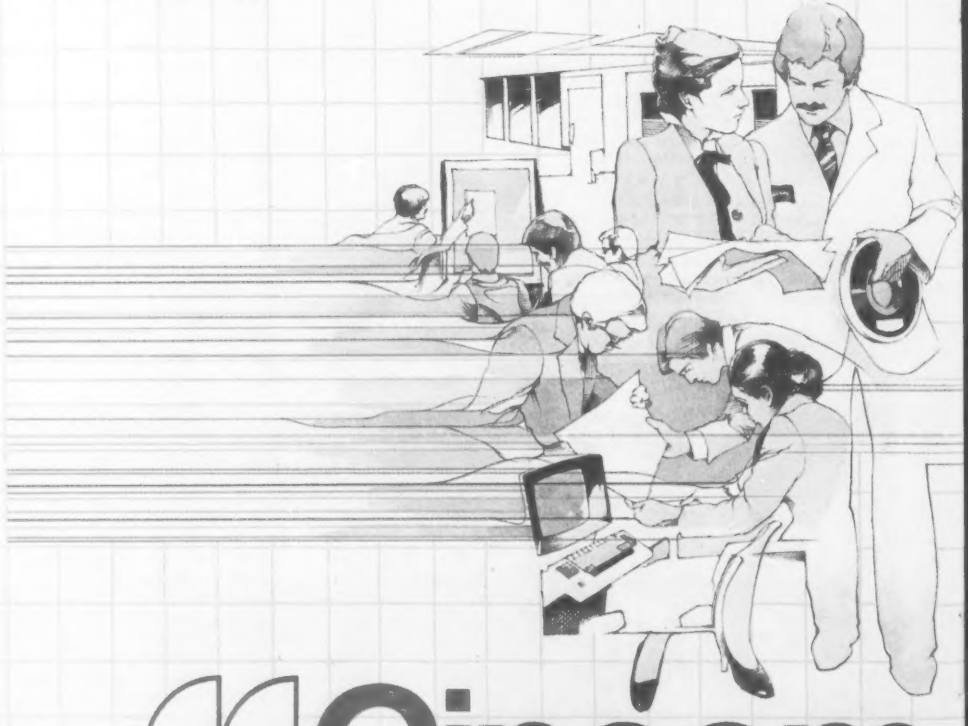

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Leasing Funds Available: Dealers, Financiers

By Bob Johnson
CW New York Bureau

NEW YORK — Contrary to some gloomy predictions about the disappearance of funds for financing computer leasing deals, financial institutions and dealers contacted here are saying that money is available and they are experiencing "business as usual."

Jim Kelly, vice-president at Citicorp Industrial Credit, Inc. (CIC) in New York, said in a telephone interview that although DP managers may be becoming apprehensive about leasing deals because of the apparently bleak financing climate, his company is "actively pursuing" this business. Third-party leasing, he said, is as healthy as ever.

"We are continuing to talk to major manufacturers in the computer, minicomputer and peripheral areas. There are virtually no restrictions on funding — financial institutions like ours have a commitment to this industry," he said.

Kelly claimed there are a number of alternative financing methods available to users. Under third-party vendor leasing programs, for example, the financing company will handle all of the leasing details for users who want to lease a manufacturer's purchase-only hardware. Kelly said this kind of program is being successfully employed in leasing all types of hardware, including office automation equipment and mainframes. CIC struck a similar agreement with IBM earlier this year, he noted.

Echoing Kelly's sentiments on the availability of leasing funds was Ted Daleiden, senior vice-president of the Equipment Lease and Finance Division of Chase Commercial Corp. (CCC) in Englewood Cliffs, N.J. Daleiden said the third-party leasing business was slower in 1982 than it was in 1981, but that the reason for the doldrums is the recession, not the lack of funds to swing deals.

"We booked about 20% less in '82 than '81 in the third-party lease area, but that's because the economy has impacted companies' ability to buy, lease or sell equipment," Daleiden remarked.

Conservative Institutions

A reason that the financing picture may appear bleak, according to Daleiden, is that financial institutions are acting more conservatively when approving credit for leasing deals. He said that leasing delinquencies, write-offs and losses were higher in 1982 than in previous years. As a result, some more risky deals, which would have probably been approved last year, were denied in 1982.

"Everyone is looking at third-party leasing paper [contracts] more closely now," Daleiden said.

Paul Luftig, president of the Great Oxford Commercial Ltd., a leasing firm in New York, said that full payout leasing deals, where the user takes the full risk, are prospering. "The problem is not in the availability of financing, but the number of transactions being made," he said. "The economy is hurting the number of deals, and users' credit is watched very carefully by financial institutions in this kind of economic climate," he said.

Luftig also held that third-party leasing deals require financial institutions to do a lot of marketing to vendors and customers.

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Voice Notes Announced

SUNNYVALE, Calif. — Centigram Corp. has announced four applications notes that detail applications for the company's Voiceware Development System, Lisa speech output device and Vopac speech digitizer.

The notes are titled "Applications of Digital Speech Technology: The Voice of Alarm"; "Making Mail Talk"; "Helping People Learn"; and "Voice Output via [AT&T's] Touch-Tone."

For information on ordering the free application notes contact Centigram Corp., 1153 Bourdeau, Sunnyvale, Calif. 94086.

M/A-Com Gets Reorganized

GERMANTOWN, Md. — Jack A. Shaw, president and chief executive officer of M/A-Com DCC, Inc., announced a companywide reorganization, effective immediately.

Appointed to various posts within the company were: Pradman Kaul, senior vice-president; J. Lou Peeler, senior vice-president and corporate secretary; Andrew M. Werth, senior vice-president of Satellite Communications Group; Pradeep Kaul, senior vice-president of engineering; Jay Justed, vice-president of Satellite Communications Group; Larry Campbell, vice-president of Lightwave Communications; James Lucchese, vice-president of finance and treasurer; William Kaht, vice-president of human resources and administration; J.S. McClanahan, vice-president of operations; Sheldon B. Revkin, assistant vice-president of Data Communications Group; and Dan Fraley, assistant vice-president of hardware development.

M/A-Com is at 11717 Exploration Lane, Germantown, Md. 20874.

For Info on Bombing

IBM Offers $50,000 Reward

NEW YORK — IBM has offered a $50,000 reward for information leading to the arrest and conviction of those responsible for the bombing of a company office building in Harrison, N.Y., on Dec. 16.

A group calling itself the United Freedom Federation claimed responsibility for the bombing and for a blast at a South African Airways purchasing office in Elmont, Long Island, the same day, the Federal Bureau of Investigation said. No one was injured in either explosion.

The bomb, placed outside the IBM building, caused extensive damage with an explosion that was heard up to five miles away. The building had been evacuated minutes before the blast, following an anonymous tip received at a local newspaper.

The FBI New York City Police Department Task Force to Combat Terrorism is investigating the incidents. No new information has been received about the bombings.

Stanford Forms Software Center

PALO ALTO, Calif. — Stanford University has announced the formation of the Software Distribution Center (SDC) to help distribute the scientific programs developed at the school and then sold to end users.

The center's purpose is to enable the programs to be widely distributed without their developers getting bogged down assisting program users. In the past, the university would license a company to distribute and support its software, with a Stanford scientist then working with the buyer to iron out program bugs.

More information is available from Bill Osborn at Stanford University, Stanford, Calif. 94305.

Young Ruling Denied Review

(Continued from Page 65)

possible competition from public accounting firms offering DP services.

Bryce alleged that it demonstrated its MIS methodology, called Pride, to Arthur Young and its client, Harley-Davidson Motor Co., Inc., in 1974. At that time, representatives from Arthur Young signed a nondisclosure statement, the suit stated. Bryce alleged that shortly thereafter, Arthur Young used the Bryce methodology to supply the same kind of services to Harley-Davidson.

In a ruling last year, the Wisconsin Supreme Court held that Bryce's voluntary use of the copyright notice did not cancel the trade-secret status of its methodology.

"The benefit of this to software developers is that it says the commercially valuable part of your program is protected by state trade-secret laws," said Ron Palenski, assistant general counsel at the Association of Data Processing Service Organizations, Inc. "The court is saying that, yes, trade-secret and copyright protection may coexist."

Bryce said that although its manuals bore the copyright symbol, it never formally applied for copyright protection. "According to law, if you ever hope to copyright anything, you have to use that symbol," Milton Bryce, president of the company, said. "Just because some of our papers had a copyright symbol doesn't mean it's published material."

However, a lawyer for Arthur Young called Bryce's victory "hazardous," saying the decision did not conclusively state that copyright and trade-secret protection may coexist.

"The American Bar Association Trade Secret Committee has indicated that one should not publish documents with the copyright code and expect trade-secret protection," Gene Erbstoesser, an assistant general counsel for Arthur Young, said. "These findings are by no means conclusive."

Bryce said he has been deluged with calls from software firms interested in protecting their products. "I tell them to do two basic things," he said. "Get a nondisclosure agreement and ensure that the contract with the customer includes a statement that the information is a trade secret and is not to be revealed to a third party."

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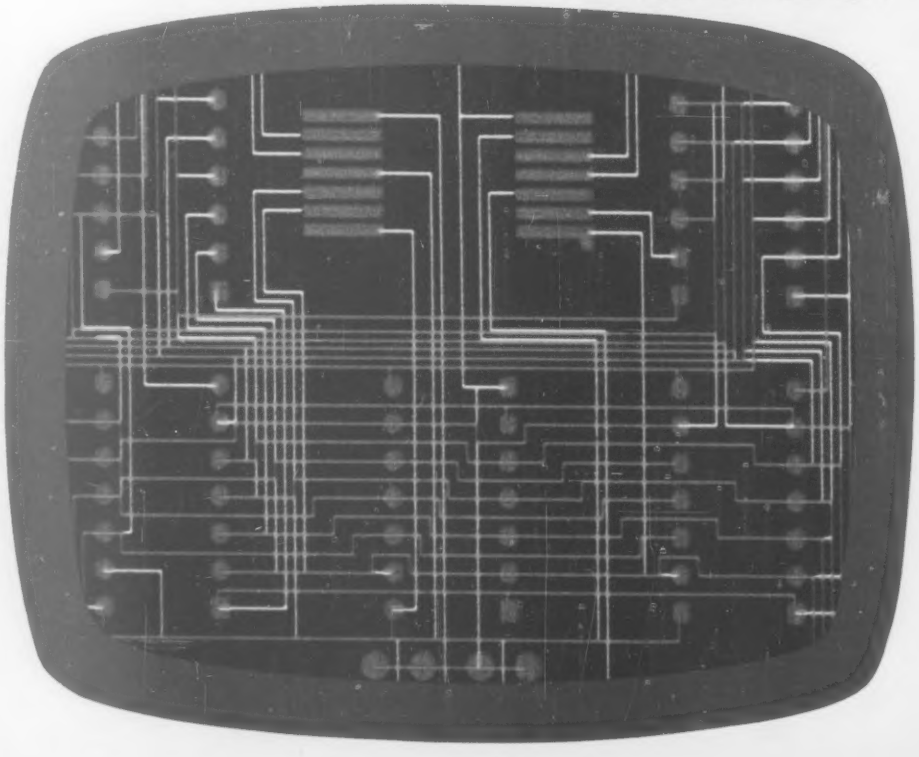

Executive Corner

• Charles J. Graham has been elected vice-president, business systems, of Continental Telecom, Inc.

• Dr. Jeffrey Krauss has been named vice-president and director of corporate affairs and K. Paul Singh has been appointed assistant vice-president of corporate strategic planning at M/A-COM Development Corp., Rockville, Md., an operating company of M/A-COM, Inc.

• Thomas B. Holmes has been named vice-president, editorial and James P. Murray vice-president, planning and development, for Datapro Research Corp.

• Roger C. Ferguson has been elected vice-president and controller of General Instrument Corp.

• Larry Jones has been appointed vice-president of systems development for Micro Data Base Systems, Inc.

• Keith H. Schonrock Jr., James F. Taylor Jr., Nancy B. Meadlock, Robert E. Thurber, John M. Thorington Jr., Ronald W. Brown, Allan B. Wilson and William D. Zarecor have been named executive vice-presidents of Intergraph Corp. Richard H. Lussier has been appointed vice-president, national sales; William T. O'Meara, vice-president, customer engineering; and Robert S. Williams, vice-president, operations, for the firm.

• Dr. Dennis C. Nystrom has been named president and chief operating officer of Hansford Data Systems, Inc., Rochester, N.Y.

• Gary E. Liebl, president of Microdata Corp., has taken on the additional responsibilities of chief executive officer (CEO) following the resignation of Donald W. Fuller as chairman and CEO. John McDonnell, president of McDonnell Douglas Corp., the parent company of Microdata, has assumed the chairmanship of Microdata.

• David R. Fernald has been appointed vice-president, marketing, for Datapoint Corp.'s Office and Computer Products Group.

• Gary L. Tooker, vice-president of Motorola, Inc. and general manager of the firm's Semiconductor Products Sector, has been elected a senior vice-president.

• Jerry Uden has been named vice-president of marketing and sales at Computer Composition International, Encino, Calif.

• Surinder S. Brar has been promoted to the newly created position of vice-president of business development for North Star Computers, Inc.

• Thomas S. Stevens has been appointed president of Memorex Corp.'s Media Products Group.

• David N. Martin has been appointed president of National Advanced Systems, Inc., a subsidiary of National Semiconductor Corp.

• James E. Grinnell has been named president of Distribution Management Systems, Inc.

• Robert L. Doretti has been named group vice-president, U.S. Operations, for Wang Laboratories, Inc.

• Robert A. Degan, president and chief operating officer of Applied Digital Data Systems, Inc., an NCR Corp. subsidiary, has been appointed chief executive officer of the firm.

• Gary L. Tooker, vice-president of Motorola, Inc. and general manager of the firm's Semiconductor Products Sector, has been elected a senior vice-president of the company.

• Pierre Gunnoe has been named director of technical operations for Execucom Systems Corp.

• John Elliot has been promoted to president of Automatic Data Processing, Inc.'s Electronic Financial Services Division.

• Richard Barton has been appointed vice-president, division manager, and Robert Hooper has been named vice-president, marketing, for Anderson Jacobson, Inc.'s Integrated Office Systems Division.

IBM Leader Dead at Age 71

BOYNTON BEACH, Fla. — The man who headed IBM in the early 1960s during the development of the 360 mainframe and spent 45 years in the employ of the company has died following a long illness.

Albert L. Williams, who was 71, joined IBM in 1936 as a salesman, moving rapidly to the controller's slot six years later. He was elected treasurer in 1947, vice-president and treasurer in 1948 and was appointed to the board of directors in 1951.

Williams was named executive vice-president in 1954, and assumed the presidency in 1961, a position he held for five years. He retired from this post and was elected chairman of the executive committee in 1966. He resigned as chairman of the committee in 1971 and was immediately elected chairman of the newly created finance committee of the board of directors, a position he held until 1978. He retired from that board and was then elected to membership on the IBM Advisory Board.

In 1970, Williams was appointed by former President Nixon as chairman of a 27-member citizens commission on international trade and investment policy. He also served on several boards, including those of the Mobil Corp., Eli Lilly and Co., General Motors Corp., General Foods Corp. and Schroeder Bank and Trust.

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Digital's VAX computers are among the most popular super minicomputers today for engineering applications. They offer a high performance, flexible environment. Using 64K memory chips, VAX memory is expandable up to 32 MB total. All VAX system family members use state-of-the-art Winchester disk technology and have an extremely user-friendly operating system. They provide numerous options to add more memory and more users.

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Nickels & Dimes

Timeplex, Inc. has filed a registration statement with the Securities and Exchange Commission covering 1.1 million shares of common stock. Montgomery Securities heads up the underwriting group.

$ $ $

Scientific Systems Services, Inc., Melbourne, Fla., has completed a private placement of $3.8 million of common stock. The shares were sold on behalf of the company and certain selling shareholders to a group of U.S. and foreign investors.

$ $ $

Applied Micro Circuits Corp. has raised $2.25 million through the sale of convertible debentures. Participants in the financing included U.S. Ventures; Robertson, Colman, Stephens & Woodman; International Industrial Investments, Inc.; Olivetti Corp.; and venture funds managed by Frederick Adler.

Penril Corp. has reported net earnings per average share were up 25% for the first quarter of fiscal 1983, which ended Oct. 31, 1982.

Bolt, Beranek and Newman, Inc. has declared a semiannual dividend of 14 cents per share, payable March 1.

'Father of Silicon Valley' Dies at Age 82

(Continued from Page 65)

the whole field of electronic engineering," recalled Hewlett. "He was the professor that influenced us to go into business."

During a 40-year career at Stanford beginning in 1925, Terman became the dean of engineering and then provost, the second-ranking academic post at the university. He was a founding member of the National Academy of Engineering, and in 1976, former President Ford awarded Terman the National Medal of Science. The following year, Stanford dedicated its new $9.2 million Terman Engineering Center.

Stanford President Donald Kennedy commented: "Much of what Stanford is, it owes to Terman's extraordinary vision."

That vision began at an early age. Born in 1900 in English, Ind., Terman was the son of Lewis M. Terman, the psychologist who developed the so-called Stanford-Binet intelligence quotient. The two Termans became one of the few father-son combinations elected to the National Academy of Sciences.

Because of his father's belief in Rousseau's notion of natural education, young Fred was not sent to school until the age of nine, when he learned to read and qualified for the third grade. He entered high school at age 13, and graduated from Stanford at age 20 with a bachelor's degree in chemical engineering. In 1924, he earned his doctorate at MIT.

Tired of the brain drain of students from Stanford to the eastern part of the U.S., Terman began to take a direct hand in encouraging local industry. "Small business always interested me," Terman once said, "so I helped five or six of my students establish companies of their own. I assisted with encouragement, advice and ideas."

Following a suggestion by Terman, William Hewlett designed and built an audio oscillator, a device that generates signals of varying frequencies. Together they enticed David Packard, a 1934 graduate, to return from General Electric Co. to start a business in Packard's garage. It has now turned into the multibillion-dollar worldwide corporation that bears their name.

During World War II, Terman moved to Harvard University where he organized a radio research laboratory devising jammers for enemy radar and made tunable receivers for detecting and analyzing enemy radar signals.

"The war made it obvious to me that science and technology are more important to national defense than masses of men. The war also showed how essential the electron was to our type of civilization. Our method of fighting the war was, to an amazing degree, built around and determined by electronic devices," Terman said.

Returning to Stanford as dean of engineering in 1946, Terman began building its reputation as a nationally recognized research center. He began to foster what Hewlett termed "a sort of symbiotic relationship between industry and the university."

Terman was instrumental in opening up Stanford's classrooms to academically qualified industry engineers. He started the honors cooperative program in 1953-1954, enabling engineers to sit in classes directly or via a television network in their companies. Industrial affiliates programs started and corporate gift support rose steadily.

By 1974, Santa Clara County enjoyed what *Fortune* magazine termed "the densest concentration of innovative industry that exists anywhere in the world," with more than 800 pioneering high-technology firms. This, claimed *Fortune*, was almost wholly the handiwork of Frederick Terman.

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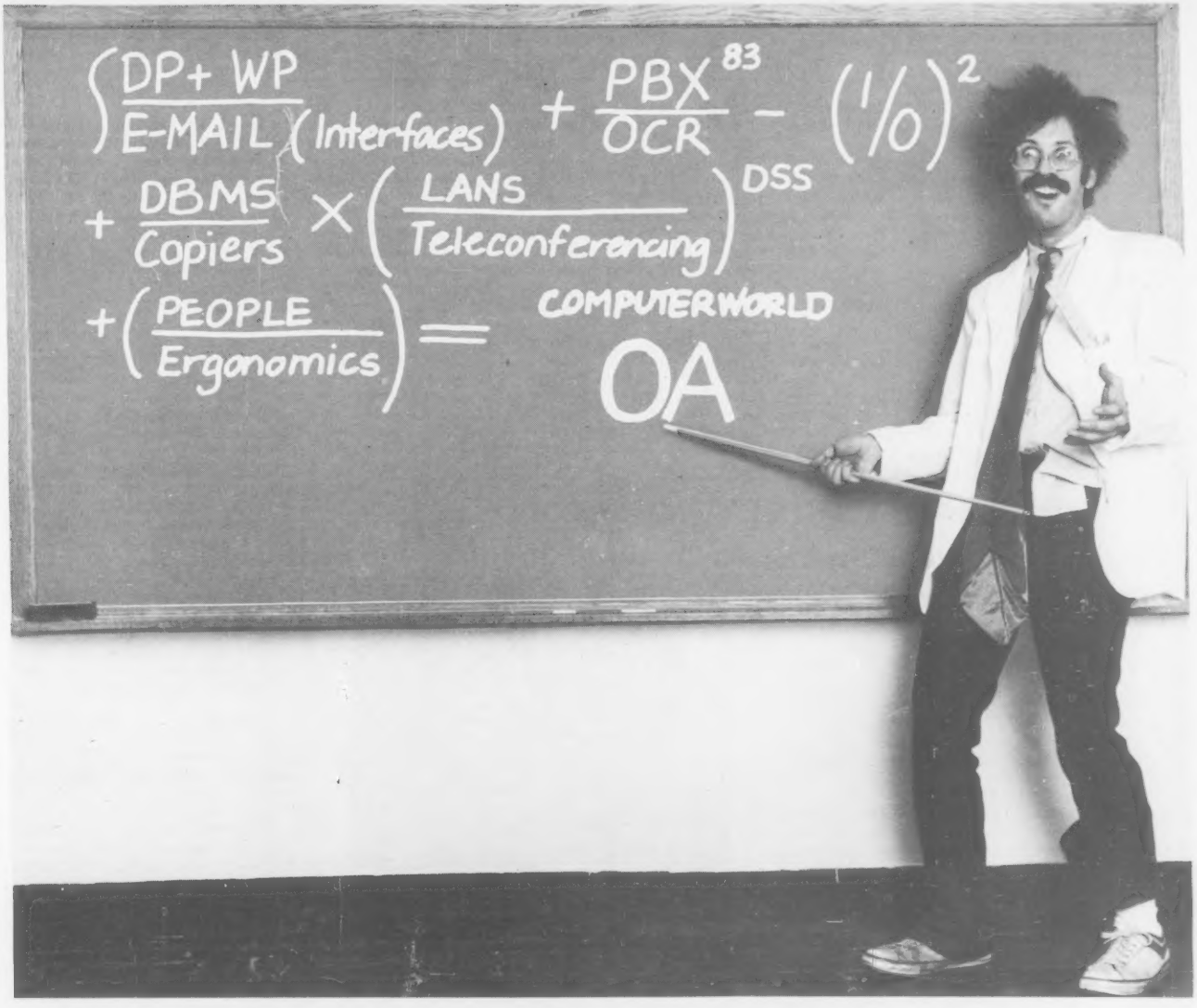

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Orders & Installations

Computer Sciences Corp. has received two contracts totaling more than $16.4 million from the National Aeronautics and Space Administration for continued operation of the Explorer satellite and support to the Mission and Data Operations Directorate at Goddard Space Flight Center, Md. The firm has also been awarded a $38.3 million contract by the U.S. Navy to supply a standard automated financial system to 14 naval research laboratories.

Ultrasystems, Inc. has been awarded an $8 million contract by the U.S. Army Electronic Proving Grounds for support in testing tactical command, control, communications and intelligence systems.

Priam Corp. will supply Plantronics Zehntel, Walnut Creek, Calif., with an undisclosed number of 8-in. Winchester disk drives under a recently signed $1.5 million contract.

Universal Communications Systems, Inc. has been awarded a $5.4 million contract by American Electric Power Services Corp., a subsidiary of American Electric Power Service Corp., for installation of computerized telephone equipment in Columbus, Ohio; Canton, Ohio; Roanoke, Va.; and Fort Wayne, Ind.

Disctron, Inc., a subsidiary of Computer & Communications Technology Corp., has received a $4 million contract from Durango Systems, Inc. for 10M- and 20M-byte disk drives for use in Durango's F-85 small business computer.

Corona Data Systems, Inc. has been awarded an $8 million contract by High Technology Distribution of St. Louis, for its IBM Personal Computer-compatible personal computers.

Cybertek Computer Products, Inc. has received a five-year contract extension for data processing services from Republic-Vanguard Life Insurance Co.

Honeywell, Inc. has received an order from Camden County, N.J., for a DPS 8/20 computer valued at $1 million.

GTE Business Communications Products Group has been awarded a contract valued at approximately $4.5 million by Pacific Gas & Electric for two digital GTD-4600E private automatic branch exchanges.

Sperry Univac has received orders for its System 80 computer from Analog Devices, Inc.'s Computer Laboratories Division, Greensboro, N.C.; the City of Lynn, Mass.; Wansbeck District Council, Charnwood Borough Council and Wilkinson Transport of the UK; and Queensland State Stores Board and George Ward Distributors Pty., Ltd., Australia.

Paradyne Corp. has received an order from Ford Motor Co. of Canada for its Pixnet communications network and Response distributed data processing system. The order is valued at over $7 million.

Prime Computer, Inc. has received a $2.5 million order from Paychex, Inc., Rochester, N.Y., for 35 Prime systems, a combination of 250-11 and 2250 superminicomputers.

Ithaca Intersystems, Inc. has been selected by the state of New York as one of three approved vendors to sell microcomputer systems to state agencies. The award has a potential value of more than $2.2 million.

Digityne Corp. has been awarded a $2.4 million contract by Combined Computer Language for a minimum of 200 minicomputer systems.

Computer Composition International (CCI), Encino, Calif., has received an order for eight CCI front-end systems from Harcourt, Brace & Jovanich Publications, Duluth, Minn.

Sigma Software, Inc. will install its computer programs in 47 branch offices of Home Life Insurance Co. of New York.

System Development Corp. has been awarded a $45.9 million contract by the Environmental Protection Agency to provide facility management support for the EPA Data Processing Services Center.

Allied Telephone Co.'s Allied Telecommunications Systems subsidiary has been awarded a $2.5 million contract to provide a telecommunications system for Trust Co. of Georgia.

Datapoint Corp. has received a $1.5 million order for automated office equipment from the Federal Intermediate Credit Bank, Sacramento, Calif.

Planning Research Corp. has been awarded a one-year, $4.9 million extension of its contract for software development and support from the U.S. Navy Electronic Systems Command.

Burroughs Corp.'s Federal and Special Systems Group has been awarded a $3.2 million contract by the U.S. Postal Service (USPS) for 120 Expanded Zip Retrofit kits to be used in modifying the USPS's multiposition letter-sorting machines.

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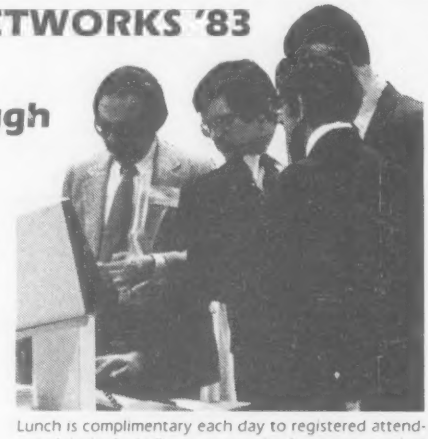

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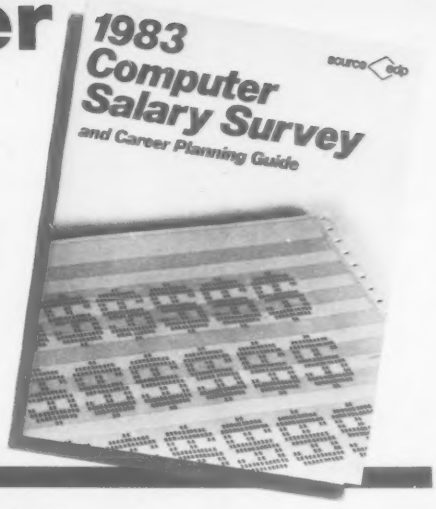

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No other Survey we know of is more comprehensive. It's based on contacts with more than 50,000 professionals and 25,000 organizations.

Learn about new growth areas.

Most significantly, you'll also read about which specific areas of specialization are forecasted for unusual growth in this decade and beyond. The past year saw many changes in the economy and has altered career prospects for some professionals who were not properly prepared, so the need to stay abreast of current trends and career planning has never been so critical.

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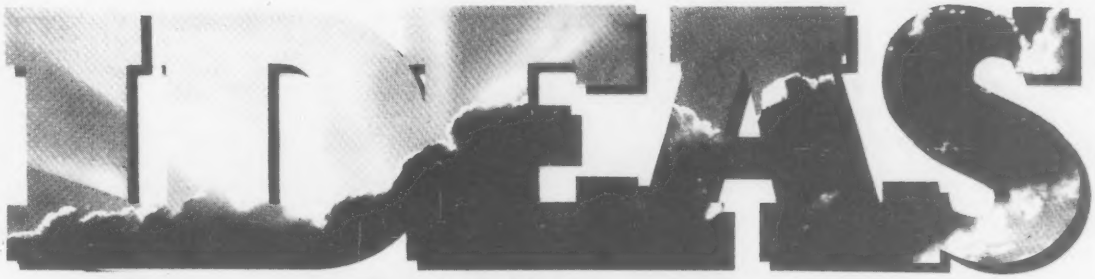

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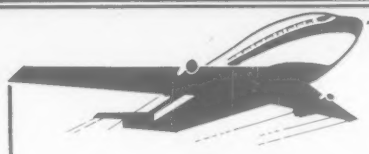

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As a Fortune 500 company, we presently have an outstanding career opportunity available for a Director of Retail Financial Systems Development.

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For consideration for this unique opportunity, which offers an excellent salary and bonus compensation plan, please send a detailed resume along with salary history to:

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This is highly responsible technical, analytical and professional work in the installation and maintenance of data processing system software. Responsibilities include assisting in the development of specifications and criteria for the acquisition of equipment and software packages, evaluating vendor proposals for specifications conformance, and analyzing new development for impact on current operations.

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Resumes should be submitted to the Employment Division, P.O. Box 2842, St. Petersburg, Florida 33731.

AEOE

The deadline for receiving resumes is January 15, 1983.

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The leading title insurance company in San Antonio has immediate opening for the newly created position of DP Manager. We are a sound, well established, aggressive business ideally located in the sunbelt.

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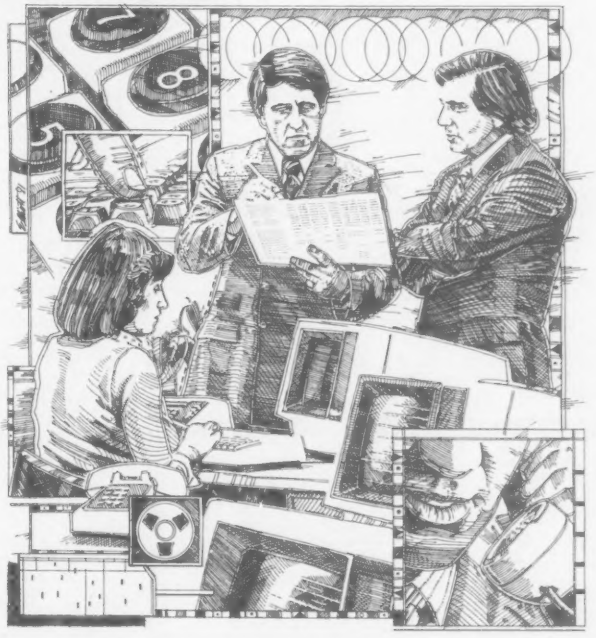

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If you're looking for increased responsibilities and challenging work in a growth-oriented company, send your resume in complete confidence to:

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An EOE M/F

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Cleveland, Ohio 44131 (216) 524-5500
COLUMBUS: Michael Thomas, Inc.
651 E. Wilson Bridge Road, Suite 201
Worthington, Ohio 43085 (614) 846-0926
DALLAS: DataPro Personnel Consultants
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Dallas, Texas 75230 (214) 661-8600
DENVER: EDP Infinity, Inc.
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Job Order # 1344655

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To apply, please send your resume to: Eva Martinez, Digital Equipment Corporation, Customer Support Center, Dept. 0110 3804, 4405 N. Chestnut Street, Colorado Springs, Colorado 80907.

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Math Dept.
University of Alaska, Anchorage
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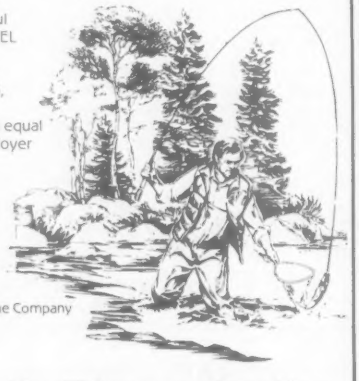

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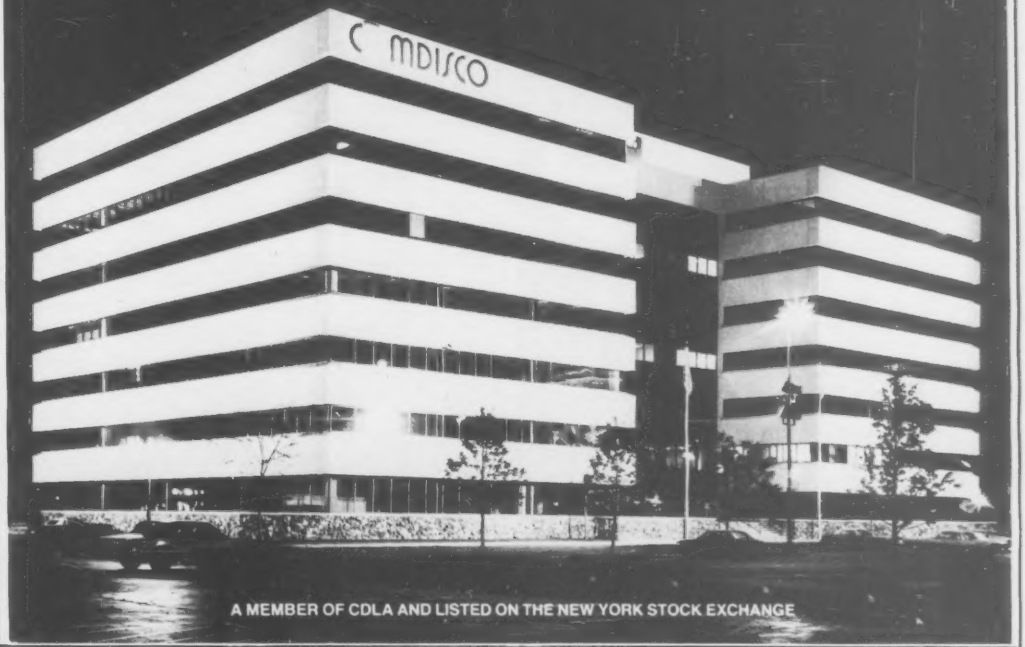

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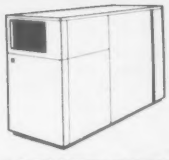

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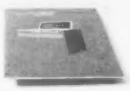

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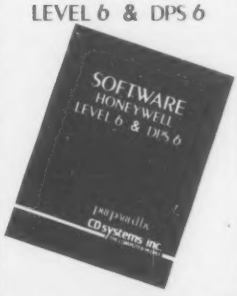

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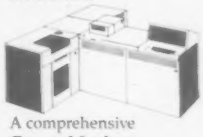

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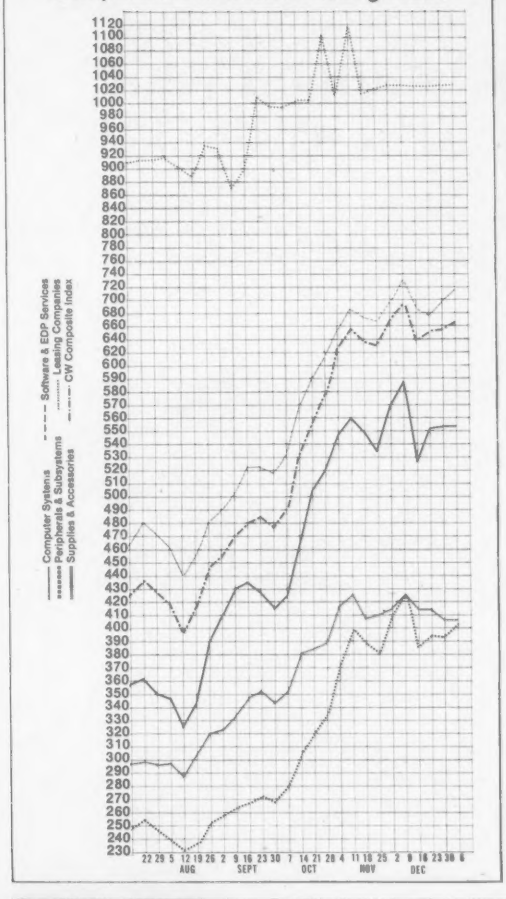

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TRADE QUOTES

Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, JANUARY 5, 1983

All statistics compiled, computed and formatted by TRADE QUOTES, INC Cambridge, Mass. 02139

COMPUTER SYSTEMS

		1982-83 RANGE (1)	CLOSE JAN 5 1983	WEEK NET CHNGE	WEEK PCT CHNGE
A	AMDAHL CORP	17- 35	28 5/8	+2 1/2	+9.2
N	BURROUGHS CORP	28- 48	41 5/8	-1	-2.3
O	COMPUTER AUTOMATION	7- 17	14 1/8	-2 1/8	-13.0
N	CONTROL DATA CORP	21- 42	37 3/4	+ 3/8	+1.0
N	CRAY RESEARCH INC	20- 45	37 1/2	-2	-5.0
N	DATA GENERAL CORP	20- 59	40	+ 5/8	+1.5
N	DATAPOINT CORP	11- 54	18	- 1/4	-1.3
N	DIGITAL EQUIPMENT	62-113	94 1/4	-6 1/4	-6.2
A	EECO INC	6- 11	8 3/4	0	0.0
N	ELECTRONIC ASSOC.	5- 12	9 3/4	- 1/2	-4.8
N	FLOATING POINT SYST	16- 70	25 3/8	-1 1/4	-4.6
N	FOXBORO	22- 38	35 3/8	+ 1/8	+0.3
O	FULCRUM COMP GRP	1- 3	1/4	0	0.0
O	GENERAL AUTOMATION	3- 8	5 3/4	- 3/8	-6.1
N	HARRIS CORP	20- 43	36 3/4	- 1/2	-1.3
N	HEWLETT-PACKARD CO	36- 92	73	- 5/8	-0.8
N	HONEYWELL INC	60-104	83 5/8	-3 3/8	-3.8
N	IBM	48- 97	96	- 5/8	-0.6
O	IPL SYSTEMS INC	5- 9	6	+ 3/4	+14.2
O	MAGNUSON COMP SYSTS	2- 16	3 3/8	+ 3/4	+28.5
N	MANAGEMENT ASSIST	7- 18	11 3/4	+1	+9.3
O	MINI-COMPUTER SYST	1- 4	5/8	0	0.0
N	MODULAR COMPUTER SYS	6- 13	11 5/8	+ 5/8	+5.6
N	MOHAWK DATA SCI	10- 19	14 7/8	+ 1/2	+3.4
N	NCR	38- 85	83 1/2	-5 5/8	-6.3
N	PERKIN-ELMER	17- 32	27 1/4	-1 1/8	-3.8
N	PRIME COMPUTER INC	16- 38	35 3/8	+ 1/8	+0.3
N	SPERRY CORP	21- 37	33	- 3/4	-2.2
O	TANDEM COMPUTERS INC	14- 34	24 1/8	-1 3/4	-6.7
N	TEXAS INSTRUMENTS	71-151	128 3/4	-7 3/8	-5.4
A	WANG LABS "B"	13- 32	30	+1 1/4	+4.3
O	WANG LABS "C"	11- 31	25 3/8	+ 1/8	+0.4

LEASING COMPANIES

O	BOOTHE FINANCIAL CP	22- 28	26 3/4	0	0.0
N	CONDISCO INC	13- 35	34 1/8	+ 7/8	+2.6
B	COMMERCE GROUP CORP	1- 1	1/4	0	0.0
O	COMPUTER INVSTRS GRP	1- 2	3/8	0	0.0
O	CONTINENTAL INFO SYS	5- 20	12	+ 3/4	+6.6
N	DPF INC	5- 13	9 1/8	0	0.0
O	ITEL	1- 5	1 1/2	0	0.0
O	LEASPAC CORP	1- 2	1/8	0	0.0
N	U.S. LEASING	18- 37	35	- 1/4	-0.7

EXCH: N=NEW YORK; A=AMERICAN; P=PHIL-BALT-WASH; B=BOSTON
L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

SOFTWARE & EDP SERVICES

		1982-83 RANGE (1)	CLOSE JAN 5 1983	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED COMP TECH	1- 6	2 1/4	+ 1/2	+28.5
O	ADVANCED SYSTEMS INC	9- 19	18 3/4	0	0.0
O	AGS COMPUTERS INC	7- 17	14 3/4	- 3/4	-4.8
N	ANALOG INC	9- 18	14 7/8	-1 1/4	-7.7
O	ANALYSTS INTL CORP	5- 8	7 1/2	- 1/2	-6.2
A	APPLIED DATA RES.	16- 42	36 5/8	- 1/2	-1.2
O	ASK COMPUTER SYSTEMS	12- 27	23	+ 1/4	+1.0
B	ASTRODYNE COMP IND	1- 5	2 3/4	+ 7/8	+46.6
N	AUTOMATIC DATA PROC.	21- 37	35 1/2	-1 1/2	-4.0
O	CGA COMPUTER ASSOC	5- 9	8 1/2	0	0.0
O	COMPUTER ASSOC INT'L	12- 38	33 3/4	-2	-5.5
O	COMPUTER HORIZONS	1- 3	6 3/4	- 1/4	-3.5
O	COMPUTER NETWORK	4- 9	7 3/8	+ 1/4	+3.5
N	COMPUTER SCIENCES	11- 20	18 1/4	- 3/4	-3.9
O	COMPUTER TASK GROUP	8- 18	15 3/4	+1 1/2	+10.5
O	COMPUTER USAGE	2- 6	5 1/2	+ 3/4	+15.7
O	COMPUTONE SYSTEMS	13- 30	26 7/8	- 7/8	-3.1
O	CONSERV CORP	11- 20	16 1/4	- 1/4	-1.5
O	CONSHARE	6- 10	7	+ 3/8	+5.6
N	CULLINANE DATABASE	24- 53	48 3/4	+2 3/4	+5.9
O	CYCARE SYSTEMS INC	9- 18	14 1/4	- 3/4	-5.0
O	DATA DIMENSIONS INC	1- 3	1/4	0	0.0
O	DATATAB	0- 4	5/8	+ 1/8	+25.0
O	DYATRON CORP	2- 4	3 1/8	+ 5/8	+25.0
N	ELECTRONIC DATA SYST	19- 50	44 7/8	- 3/8	-0.8
O	INFORMATICS INC	10- 24	20 3/4	+ 3/8	+1.8
O	INSYTE CORP	1- 3	1 7/8	+ 1/8	+7.1
O	IPS COMPUTER MARKET.	1- 2	1 1/8	- 1/8	-10.0
O	KERANE ASSOCIATES	4- 8	6 1/2	-1 1/4	-16.1
A	LOGICON	12- 29	26 7/8	+1	+3.5
O	MNGT SCI AMER INC	9- 21	18 3/4	- 3/4	-3.8
O	MATHEMATICA INC	12- 18	15	+ 1/2	+3.4
O	MATHEMATICAL APP GRP	12- 19	16	+2 3/4	+20.7
O	NATIONAL DATA CORP	13- 26	23	- 1/8	-0.5
O	PANSOPHIC SYSTEMS	8- 20	17	- 3/8	-2.1
N	PLANNING RESEARCH	6- 11	10	- 1/4	-2.4
O	PROGRAMMING & SYS	1- 3	2 7/8	0	0.0
O	REYNOLDS & REYNOLD	17- 34	31	+ 1/4	+0.8
O	SCI CORP	21- 45	38 1/2	- 3/4	-1.8
O	SHARED MEDICAL SYST	28- 55	53 3/8	-1 5/8	-2.9
O	SCIENTIFIC COMPUTERS	6- 13	11	+1	+10.0
O	SOFTWARE AG	5- 17	10 1/2	0	0.0
N	TYMSHARE INC	12- 30	18 3/8	+ 7/8	+5.0
A	URS CORP	10- 15	15	+ 3/4	+5.2
N	WYLY CORP	7- 13	8 1/4	0	0.0

PERIPHERALS & SUBSYSTEMS

N	AM INTERNATIONAL	1- 15	2 1/4	0	0.0
A	ANDERSON JACOBSON	8- 28	19 5/8	+ 5/8	+3.2
O	AUTO-TROL TECHNOLOGY	8- 19	14 1/4	- 1/4	-1.7
O	SANCTEC INC	7- 33	15	- 3/4	-4.7
A	BEEHIVE INTL	6- 8	8 1/8	+ 1/8	+1.3
A	BOLT,BERANEK & NEW	9- 34	31 1/2	+ 1/2	+1.6
O	CAMBEX CORP	2- 4	2 3/8	+ 1/2	+26.6
N	CENTRONICS DATA CORP	8- 17	13 1/4	- 1/4	-1.8
A	CETEC CORP	4- 8	5 1/2	- 1/4	-4.3
O	COGNITRONICS	2- 8	6 5/8	+ 1/8	+1.9
O	COMPUTER COMMUN.	1- 2	3/4	0	0.0

COMPUTER CONSOLES

		1982-83 RANGE (1)	CLOSE JAN 5 1983	WEEK NET CHNGE	WEEK PCT CHNGE
A	COMPUTER CONSOLES	15- 28	26 1/8	-1	-2.6
O	COMPUTER DEVICES INC	4- 21	11 7/8	+2 1/8	+21.7
O	COMPUTER TRANSCEIVER	4- 7	5 3/4	- 1/8	-2.1
N	COMPUTERVISION CORP	19- 38	31 3/8	+1 1/2	+5.0
N	CONRAC CORP	21- 36	32 1/2	+ 1/8	+0.3
A	DATA ACCESS SYSTEMS	2- 5	1	- 1/4	-20.0
A	DATAPRODUCTS CORP	16- 36	34	+ 1/4	+0.7
A	DATARAM CORP	5- 10	8 1/2	+ 5/8	+7.9
O	DATUM INC	2- 6	5 1/2	- 1/4	-4.3
O	DAVID JAMISON CARLYL	2- 7	4 5/8	+ 3/8	+8.8
O	DECISION DATA COMPUT	2- 14	10 5/8	-1 1/4	-10.5
O	DELTA DATA SYSTEMS	1- 3	2 3/8	- 1/4	-9.5
N	ELECTRONIC M & M	5- 9	6 2/8	- 1/8	-1.9
O	EVANS & SUTHERLAND	18- 48	43 1/2	+2	+4.8
O	GANDALF TECHNOLOGIES	10- 22	17 1/4	- 1/4	-1.4
N	GEN'L DATA COMM IND	6- 18	16 1/2	- 1/2	-2.9
O	GENERAL TERMINAL CP	0- 4	5/8	+ 1/8	+25.0
O	GREAT SOUTHWEST IND	2- 9	3	+ 3/4	+33.3
N	HAZELTINE CORP	22- 43	39 3/8	0	0.0
O	ICOT CORP	3- 8	7 3/8	- 3/4	-8.9
O	INFORMATION INTL INC	10- 22	19 3/4	+ 1/2	+2.5
O	INTEL CORP	21- 42	38	- 1/4	-0.6
O	IPL SYSTEMS INC	5- 9	6	+ 3/4	+14.2
A	LUNDY ELECTRONICS	7- 14	11 7/8	+ 1/2	+4.3
A	MSI DATA CORP	14- 29	28	+ 1/2	+1.7
O	NETWORK SYSTEMS CORP	15- 36	35 3/8	+ 1/2	+1.4
O	OMEX	3- 8	3	0	0.0
N	PARADYNE CORP	24- 50	37 7/8	+ 7/8	+2.3
A	PENRIL CORP	7- 12	8 7/8	- 1/4	-2.4
O	RAMTEK CORP	12- 20	15 1/2	+ 1/2	+3.3
N	RECOGNITION EQUIP	4- 10	9 1/8	+ 1/8	+1.3
O	SCAN DATA	1- 5	1 1/4	0	0.0
N	STORAGE TECHNOLOGY	16- 40	21 3/8	- 1/4	-1.1
O	SYKES DATATRONICS	8- 34	11 3/8	- 1/8	-1.0
A	T BAR INC	7- 11	9 3/8	+ 1/2	+5.6
A	TEC INC	4- 12	9 5/8	-1	-9.4
N	TEKTRONIX INC	34- 61	59 3/4	+2	+3.4
N	TELEX	5- 27	21 3/4	+ 1/4	+1.1
O	TESDATA SYSTEMS CP	3- 10	6 3/8	+ 1/2	+8.5
A	TIMEPLEX INC	7- 18	18 1/4	+ 1/4	+1.3
O	VISUAL TECHNOLOGY	8- 17	15 1/4	0	0.0
O	WILTEK INC	1- 3	1 7/8	+ 1/2	+36.3

SUPPLIES & ACCESSORIES

N	AMERICAN BUS PRODS	11- 19	16 7/8	0	0.0
O	BALTIMORE BUS FORMS	1- 2	1 1/4	0	0.0
N	BARRY WRIGHT	13- 22	19 1/4	-1 1/2	-7.2
O	CYBERMATICS INC	1- 1	7/8	0	0.0
A	DUPLEX PRODUCTS INC	12- 20	17 1/4	- 1/4	-1.4
N	ENNIS BUS. FORMS	16- 30	26	0	0.0
N	3M COMPANY	49- 79	73	-3 1/4	-4.2
N	MOORE CORP LTD	26- 42	41	0	0.0
N	NASHUA CORP	9- 18	10 5/8	+ 1/2	+4.8
O	STANDARD REGISTER	32- 72	68 1/2	0	0.0
A	TAB PRODUCTS CO	12- 25	24 7/8	+1 3/8	+5.8
N	WALLACE BUS FORMS	22- 50	46 1/4	+ 1/4	+0.5

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